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ABSTRACT

This document contains the two volumes of the Conference Edition of Healthy People 2010, a comprehensive, nationwide health promotion and disease prevention agenda. The first section of Volume I, "Healthy People 2010: Understanding and Improving Health," includes "Introduction," "Leading Health Indicators," and "Bibliography. The second section, "Healthy People 2010: Objectives for Improving Health (Part A)," includes a readers guide and the first 15 of 28 focus areas: "Access to Quality Health Services"; "Arthritis, Osteoporosis, and Chronic Back Conditions"; "Cancer"; "Chronic Kidney Disease"; "Diabetes"; "Disability and Secondary Conditions"; "Educational and Community-Based Programs"; "Environmental Health"; "Family Planning"; "Food Safety"; "Health Communication"; "Heart Disease and Stroke"; "HIV"; "Immunization and Infectious Diseases"; and "Injury and Violence Prevention." The first section, "Healthy People 2010: Objectives for Improving Health (Part A)" of Volume II includes: "Maternal, Infant, and Child Health"; "Medical Product Safety"; "Mental Health and Mental Disorders"; "Nutrition and Overweight"; "Occupational Safety and Health"; "Oral Health"; "Physical Activity and Fitness"; "Public Health Infrastructure"; "Respiratory Diseases"; "Sexually Transmitted Diseases"; "Substance Abuse"; "Tobacco Use"; and "Vision and Hearing." The second section of Volume II, "Tracking Healthy People 2010," includes: "General Data Issues" and "Major Data Sources for Healthy People 2010." (SM)

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Healthy People 2010
Conference Edition, Volume 1 [and] Volume 2

U.S. Department of Health and Human Services
Washington, DC
January 2000

Partnerships for Health in the New Millennium
January 24-28, 2000

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HEALTHY PEOPLE 2010

Volume I

Includes

- Understanding and Improving Health
- Objectives for Improving Health
  (Part A: Focus Areas 1–15)

Partnerships for Health in the New Millennium
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Healthy People 2010

Conference Edition-Volume I

Includes

- ◆ Understanding and Improving Health
- ◆ Objectives for Improving Health (Part A)

U. S. Department of Health and Human Services
January 2000

Message from the Secretary

Healthy People 2010 provides our Nation with the wide range of public health opportunities that exist in the first decade of the 21st century. With 467 objectives in 28 focus areas, Healthy People 2010 will be a tremendously valuable asset to health planners, medical practitioners, educators, elected officials, and all of us who work to improve health. Healthy People 2010 reflects the very best in public health planning—it is comprehensive, it was created by a broad coalition of experts from many sectors, it has been designed to measure progress over time, and, most important, it clearly lays out a series of objectives to bring better health to all people in this country.

Achieving the vision of "Healthy People in Healthy Communities" represents an opportunity for individuals to make healthy lifestyle choices for themselves and their families. It challenges clinicians to put prevention into their practices. It requires communities and businesses to support health-promoting policies in schools, worksites, and other settings. It calls for scientists to pursue new research. Above all, it demands that all of us work together, using both traditional and innovative approaches, to help the American public achieve the 10-year targets defined by Healthy People 2010.

The 20th century brought remarkable and unprecedented improvements in the lives of the people of the United States. We saw the infant mortality rate plummet and life expectancy increase by 30 years. While we recognize that most of the advances came from prevention efforts, we also saw almost unimaginable improvements in medical technologies and health care. The challenge for the 21st century is twofold. First, we must ensure that this rate of advancement continues unabated. Second, we must make certain that all Americans benefit from advancements in quality of life, regardless of their race, ethnicity, gender, disability status, income, or educational level. These challenges are substantial, but with the objectives defined by Healthy People 2010, they are achievable.

I wholeheartedly commend Healthy People 2010, and I challenge all of us to work together to achieve its ambitious and important vision.

Donna E. Shalala
Secretary of Health and Human Services

Foreword

We have witnessed a great deal of progress in public health and medicine since our Nation first embarked on the national planning process for the Healthy People initiative. The process began in 1979 with *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*, which was followed in 1990 by *Healthy People 2000*. Healthy People 2010 represents the third time that the U.S. Department of Health and Human Services (HHS) has developed 10-year health objectives for the Nation.

Healthy People 2010 reflects the scientific advances that have taken place over the past 20 years in preventive medicine, disease surveillance, vaccine and therapeutic development, and information technology. It also mirrors the changing demographics of our country, the changes that have taken place in health care, and the growing impact of global forces on our national health status.

Healthy People 2010 incorporates input from a broad cross-section of people. Scientific experts from many Federal agencies took the lead in developing the focus areas and objectives. The Secretary's Council on National Health Promotion and Disease Prevention Objectives for 2010 and the Healthy People Steering Committee provided guidance to steer the process. The HHS Office of Public Health and Science, particularly the Office of Disease Prevention and Health Promotion, expertly managed the process. But perhaps most important to the success of this effort was the overwhelming and enthusiastic contribution made by the Healthy People Consortium and the public. We received more than 11,000 comments from people in every State by fax, Internet, letter, and in person through several public meetings.

The knowledge, commitment, and collaboration of these groups have combined to produce national health objectives that are even more comprehensive than their predecessors. There are 467 objectives in 28 focus areas, making Healthy People 2010 an encyclopedic compilation of health improvement opportunities for the next decade. Building on two decades of success in Healthy People initiatives, Healthy People 2010 is poised to address the concerns of the 21st century. Two major goals reflect the Nation's changing demographics. The first goal, which addresses the fact that we are growing older as a Nation, is to increase the quality and years of healthy life. The second goal, which addresses the diversity of our population, is to eliminate health disparities.

And, for the first time, a set of Leading Health Indicators will help individuals and communities target the actions to improve health. The Leading Health Indicators also will help communities track the success of these actions.

I sincerely appreciate the number of people, institutions, and organizations that have worked together to create this important document. But our journey has just begun. I encourage you to stay the course as we pursue the vision of Healthy People 2010 to create tomorrow's healthier people today.

David Satcher, M.D., Ph.D.
Assistant Secretary for Health and
Surgeon General

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Healthy People 2010

Understanding and Improving Health

HEALTHY PEOPLE 2010

Introduction

Healthy People 2010 outlines a comprehensive, nationwide health promotion and disease prevention agenda. It is designed to serve as a roadmap for improving the health of all people in the United States during the first decade of the 21st century.

Like the preceding Healthy People 2000 initiative—which was driven by an ambitious, yet achievable, 10-year strategy for improving the Nation's health by the end of the 20th century—Healthy People 2010 is committed to a single, overarching purpose: promoting health and preventing illness, disability, and premature death.

The History Behind the Healthy People 2010 Initiative

Healthy People 2010 builds on initiatives pursued over the past two decades. In 1979, *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention* provided national goals for reducing premature deaths and preserving independence for older adults. In 1980, another report, *Promoting Health/Preventing Disease: Objectives for the Nation*, outlined 226 targeted health objectives for the Nation to achieve over the next 10 years.

Healthy People 2000: National Health Promotion and Disease Prevention Objectives, released in 1990, identified health improvement goals and objectives to be reached by the year 2000. The Healthy People 2010 initiative continues in this tradition as an instrument to improve health for the first decade of the 21st century.

Healthy People 2010 is grounded in science, built through public consensus, and designed to measure progress.

The Way Healthy People 2010 Goals and Objectives Were Developed

Healthy People 2010 represents the ideas and expertise of a diverse range of individuals and organizations concerned about the Nation's health. The Healthy People Consortium—an alliance of more than 350 national organizations and 250 State public health, mental health, substance abuse, and environmental agencies—conducted 3 national meetings on the development of Healthy People 2010. In addition, many individuals and organizations gave testimony about health priorities at five Healthy People 2010 regional meetings held in late 1998.

On two occasions—in 1997 and in 1998—the American public was given the opportunity to share its thoughts and ideas. More than 11,000 comments on draft materials were received by mail or via the Internet from individuals in every State, the District of Columbia, and Puerto Rico. All the comments received during the development of Healthy People 2010 can be viewed on the Healthy People Website: http://www.health.gov/healthypeople.

The final Healthy People 2010 objectives were developed by teams of experts from a variety of Federal agencies under the direction of Health and Human Services Secretary Donna Shalala, Assistant Secretary for Health and Surgeon General David Satcher, and former Assistant Secretaries for Health. The process was coordinated by the Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human Services.

The Central Goals of Healthy People 2010

Healthy People 2010 is designed to achieve two overarching goals:

- Increase quality and years of healthy life
- Eliminate health disparities

These two goals are supported by specific objectives in 28 focus areas (see page17). Each objective was developed with a target to be achieved by the year 2010. A full explanation of the two goals can be found in the next section of this document: "A Systematic Approach to Health Improvement."

The Relationship Between Individual and Community Health

Over the years, it has become clear that individual health is closely linked to community health—the health of the community and environment in which individuals live, work, and play. Likewise, community health is profoundly affected by the collective behaviors, attitudes, and beliefs of everyone who lives in the community.

Indeed, the underlying premise of Healthy People 2010 is that the health of the individual is almost inseparable from the health of the larger community and that the health of every community in every State and territory determines the overall health status of the Nation. That is why the vision for Healthy People 2010 is "Healthy People in Healthy Communities."

Community health is profoundly affected by the collective behaviors, attitudes, and beliefs of everyone who lives in the community.

How Healthy People 2010 Will Improve the Nation's Health

One of the most compelling and encouraging lessons learned from the Healthy People 2000 initiative is that we, as a Nation, can make dramatic progress in improving the Nation's health in a relatively short period of time. For example, during the last decade, we achieved significant reductions in infant mortality. Childhood vaccinations are at the highest levels ever recorded in the United States. Fewer teenagers are becoming parents. Overall, alcohol, tobacco, and illicit drug use is leveling off. Death rates for coronary heart disease and stroke have declined. Significant advances have been made in the diagnosis and treatment of cancer and in reducing unintentional injuries.

But we still have a long way to go. Diabetes and other chronic conditions continue to present a serious obstacle to public health. Violence and abusive behavior continue to ravage homes and communities across the country. Mental disorders continue to go undiagnosed and untreated. Obesity in adults has increased 50 percent over the past two decades. Nearly 40 percent of adults engage in no leisure time physical activity. Smoking among adolescents has increased in the past decade. And HIV/AIDS remains a serious health problem, now disproportionately affecting women and communities of color.

Healthy People 2010 will be the guiding instrument for addressing these and other new health issues, reversing unfavorable trends, and expanding past achievements in health.

The Key Role of Community Partnerships

Community partnerships, particularly when they reach out to nontraditional partners, can be among the most effective tools for improving health in communities.

For the past two decades, Healthy People has been used as a strategic management tool for the Federal Government, States, communities, and many other public- and private-sector partners. Virtually all States, the District of Columbia, and Guam have developed their own Healthy People plans modeled after the national plan. Most States have tailored the national objectives to their specific needs.

Partnerships are effective tools for improving health in communities.

Businesses; local governments; and civic, professional, and religious organizations have also been inspired by Healthy People to print immunization reminders, set up hotlines, change cafeteria menus, begin community recycling, establish worksite fitness programs, assess school health education curriculums, sponsor health fairs, and engage in myriad other activities.

Everyone Can Help Achieve the Healthy People 2010 Objectives

Addressing the challenge of health improvement is a shared responsibility that requires the active participation and leadership of the Federal Government, States, local governments, policymakers, health care providers, professionals, business executives, educators, community leaders, and the American public itself. Although administrative responsibility for the Healthy People 2010 initiative rests in the U.S. Department of Health and Human Services, representatives of all these diverse groups shared their experience, expertise, and ideas in developing the Healthy People 2010 goals and objectives.

Healthy People 2010, however, is just the beginning. The biggest challenges still stand before us, and we all share a role in building a healthier Nation.

Regardless of your age, gender, education level, income, race, ethnicity, cultural customs, language, religious beliefs, disability, sexual orientation, geographic location, or occupation, Healthy People 2010 is designed to be a valuable resource in determining how you can participate most effectively in improving the Nation's health. Perhaps you will recognize the need to be a more active participant in decisions affecting your own health or the health of your children or loved ones. Perhaps you will assume a leadership role in promoting healthier behaviors in your neighborhood or community. Or perhaps you will use your influence and social stature to advocate for and implement policies and programs that can dramatically improve the health of dozens, hundreds, thousands, or even millions of people.

Whatever your role, this document is designed to help you determine what *you* can do—in your home, community, business, or State—to help improve the Nation's health.

Other Information Is Available About Healthy People 2010

Healthy People 2010: Understanding and Improving Health is the first of three parts in the Healthy People 2010 series. The second part, *Healthy People 2010: Objectives for Improving Health*, contains detailed descriptions of 467 objectives to improve health. These objectives are organized into 28 specific focus areas. The third part, *Tracking Healthy People 2010*, provides a comprehensive review of the statistical measures that will be used to evaluate progress.

Healthy People 2010: Objectives for Improving Health **contains 467 objectives to improve health, organized into 28 focus areas.**

To receive more information about the Healthy People 2010 initiative, visit the Website at http://www.health.gov/healthypeople, or call 1-800-367-4725.

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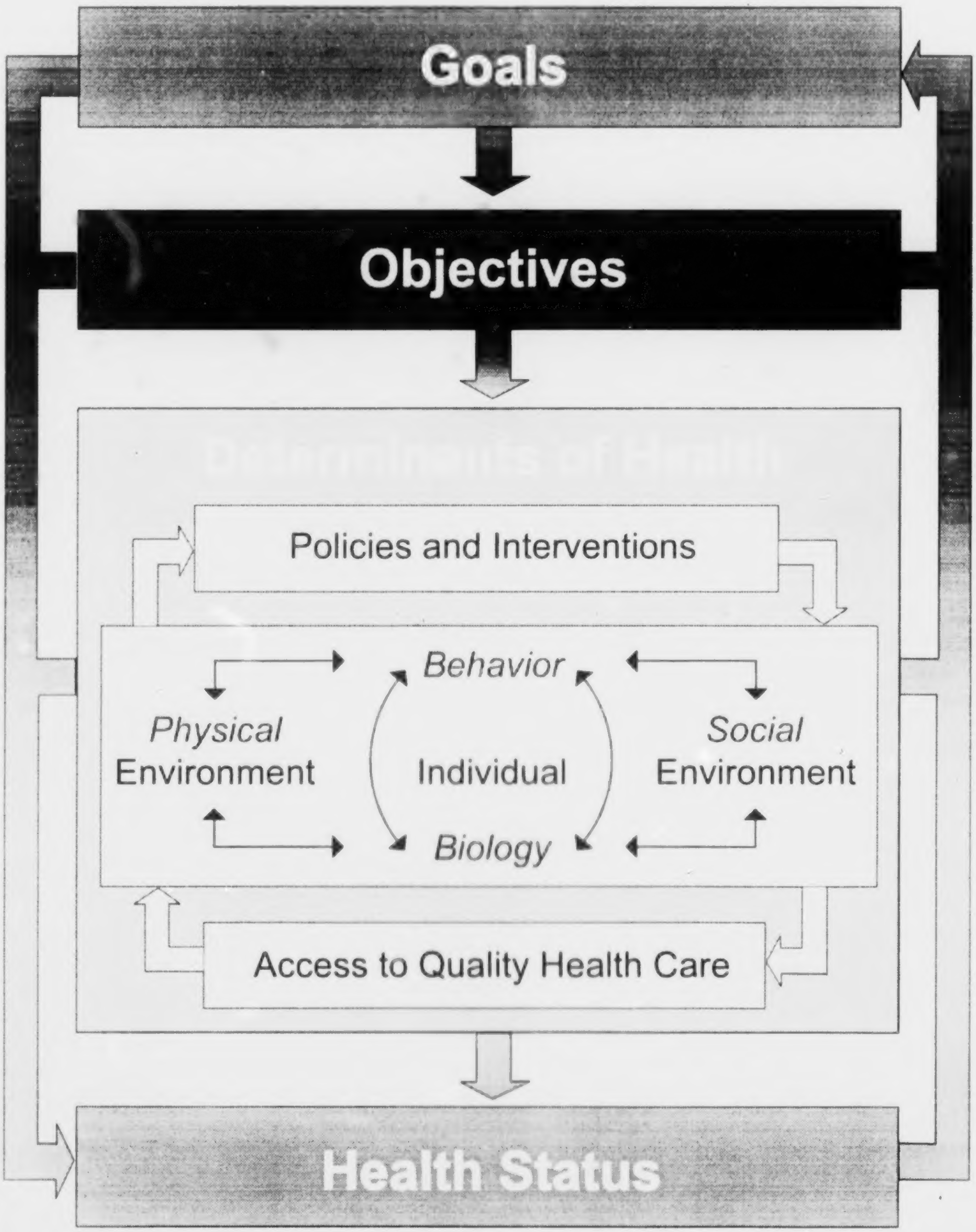
Healthy People in Healthy Communities

A Systematic Approach to Health Improvement



Goals

Objectives

Determinants of Health

Policies and Interventions

Behavior

Physical Environment

Individual

Social Environment

Biology

Access to Quality Health Care

Health Status

HEALTHY
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2010

A Systematic Approach to Health Improvement

Healthy People 2010 is about improving health—the health of each individual, the health of communities, and the health of the Nation. However, the Healthy People 2010 goals and objectives cannot by themselves improve the health status of the Nation. Instead, they should be recognized as part of a larger, systematic approach to health improvement.

This systematic approach to health improvement is composed of four key elements:

- Goals
- Objectives
- Determinants of health
- Health status

Whether this systematic approach is used to improve health on a national level, as in Healthy People 2010, or to organize community action on a particular health issue, such as promoting smoking cessation, the components remain the same. The goals provide a general focus and direction. The goals, in turn, serve as a guide for developing a set of objectives that will actually measure progress within a specified amount of time. The objectives focus on the determinants of health, which encompass the combined effects of individual and community physical and social environments and the policies and interventions used to promote health, prevent disease, and ensure access to quality health care. The ultimate measure of success in any health improvement effort is the health status of the target population.

Successful community partnerships use a systematic approach to health improvement.

Healthy People 2010 is built on this systematic approach to health improvement.

Healthy People 2010 Goals

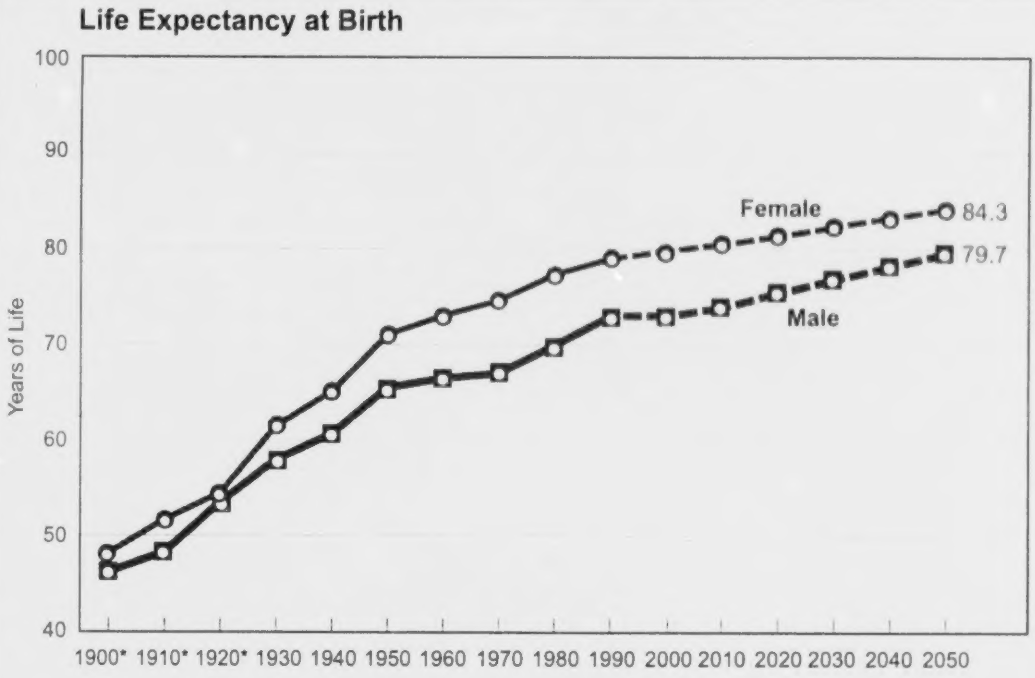
Goal 1: Increase Quality and Years of Healthy Life

The first goal of Healthy People 2010 is to help individuals of all ages increase life expectancy *and* improve their quality of life.

Life Expectancy

Life expectancy is the average number of years people born in a given year are expected to live based on a set of age-specific death rates. At the beginning of the 20th century, life expectancy at birth was 47.3 years. Fortunately, life expectancy has dramatically increased over the past 100 years (see figure 1). Today, the average life expectancy at birth is nearly 77 years.

Figure 1. Past and projected female and male life expectancy at birth, United States, 1900-2050



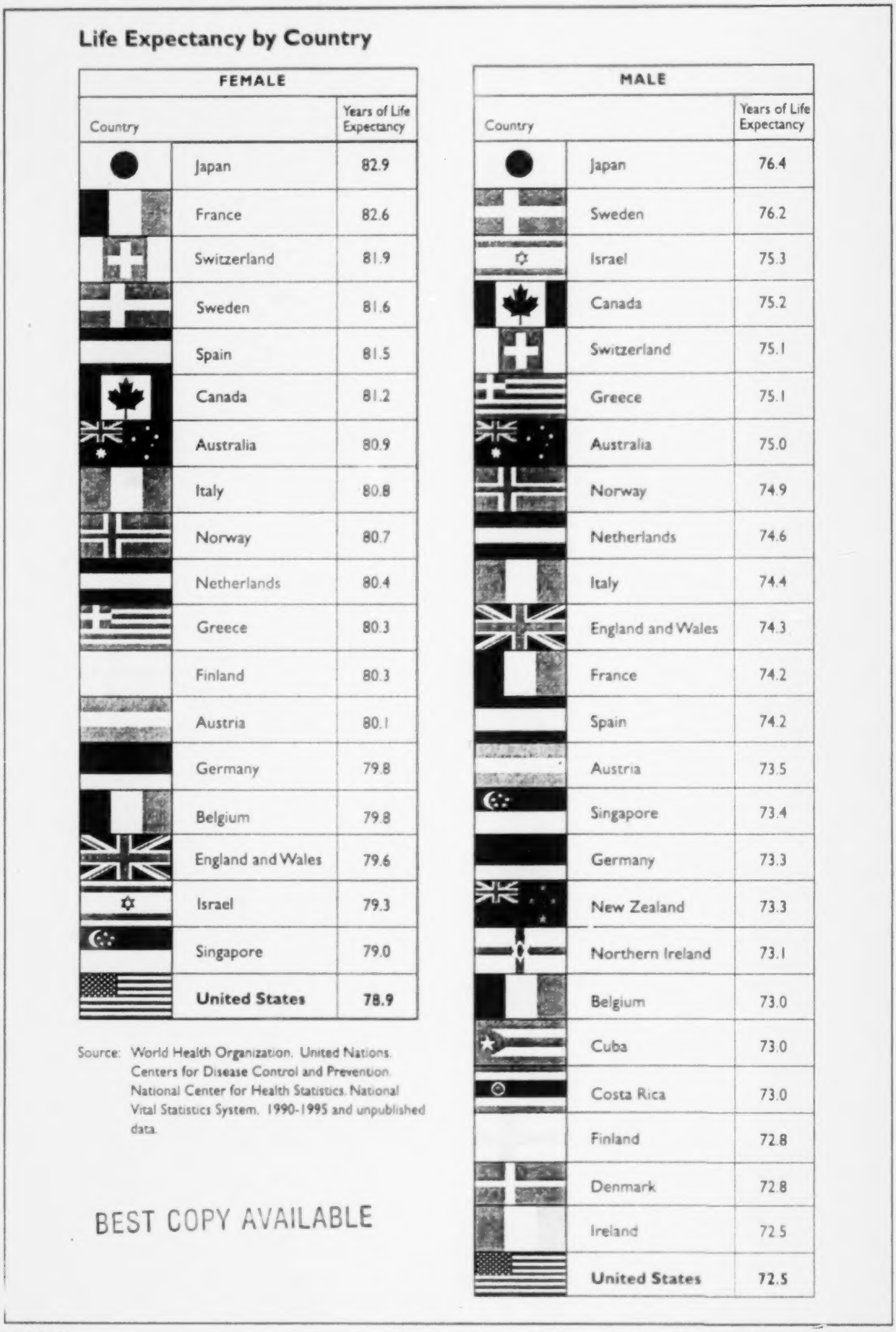
*Death registration area only. The death registration area increased from 10 States and the District of Columbia in 1900 to the coterminous United States in 1933.

Source: U.S. Department of Commerce, Bureau of the Census

Life expectancy for persons at every age group has also increased during the past century. Based on today's age-specific death rates, individuals aged 65 years can be expected to live an average of 18 more years, for a total of 83 years. Those aged 75 years can be expected to live an average of 11 more years, for a total of 86 years.

Differences in life expectancy between populations, however, suggest a substantial need and opportunity for improvement. At least 18 countries with populations of 1 million or more have life expectancies greater than the United States for both men and women (see figure 2).

Figure 2. Life expectancy at birth by gender and ranked by selected countries, 1995.



Life Expectancy by Country

FEMALE

Country	Years of Life Expectancy
Japan	82.9
France	82.6
Switzerland	81.9
Sweden	81.6
Spain	81.5
Canada	81.2
Australia	80.9
Italy	80.8
Norway	80.7
Netherlands	80.4
Greece	80.3
Finland	80.3
Austria	80.1
Germany	79.8
Belgium	79.8
England and Wales	79.6
Israel	79.3
Singapore	79.0
United States	**78.9**

MALE

Country	Years of Life Expectancy
Japan	76.4
Sweden	76.2
Israel	75.3
Canada	75.2
Switzerland	75.1
Greece	75.1
Australia	75.0
Norway	74.9
Netherlands	74.6
Italy	74.4
England and Wales	74.3
France	74.2
Spain	74.2
Austria	73.5
Singapore	73.4
Germany	73.3
New Zealand	73.3
Northern Ireland	73.1
Belgium	73.0
Cuba	73.0
Costa Rica	73.0
Finland	72.8
Denmark	72.8
Ireland	72.5
United States	**72.5**

Source: World Health Organization. United Nations. Centers for Disease Control and Prevention. National Center for Health Statistics. National Vital Statistics System. 1990-1995 and unpublished data.

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There are substantial differences in life expectancy among different population groups within the United States. For example, women outlive men by an average of 6 years. White women currently have the greatest life expectancy in the United States. The life expectancy for African American women has risen to be higher today than that for white men. People from households with an annual income of at least $25,000 live an average of 3 to 7 years longer, depending on gender and race, than people from households with annual incomes of less than $10,000.

Quality of Life

Quality of life reflects a general sense of happiness and satisfaction with our lives and environment. General quality of life encompasses all aspects of life, including health, recreation, culture, rights, values, beliefs, aspirations, and the conditions that support a life containing these elements. *Health-related quality of life* reflects a personal sense of physical and mental health and the ability to react to factors in the physical and social environments. Health-related quality of life is inherently more subjective than life expectancy and therefore can be more difficult to measure. Some tools, however, have been developed to measure health-related quality of life.

Global assessments, in which a person rates his or her health as "poor," "fair," "good," "very good," or "excellent," can be reliable indicators of a person's perceived health. In 1996, 90 percent of people in the United States reported their health as good, very good, or excellent.

Healthy days is another measure of health-related quality of life that estimates the number of days of poor physical and mental health in the past 30 days. In 1998, 82 percent of adults reported having no days in the past month where poor physical or mental health impaired their usual activities. The proportions of days that are reported "unhealthy" are the result more often of mentally unhealthy days for younger adults and physically unhealthy days for older adults.

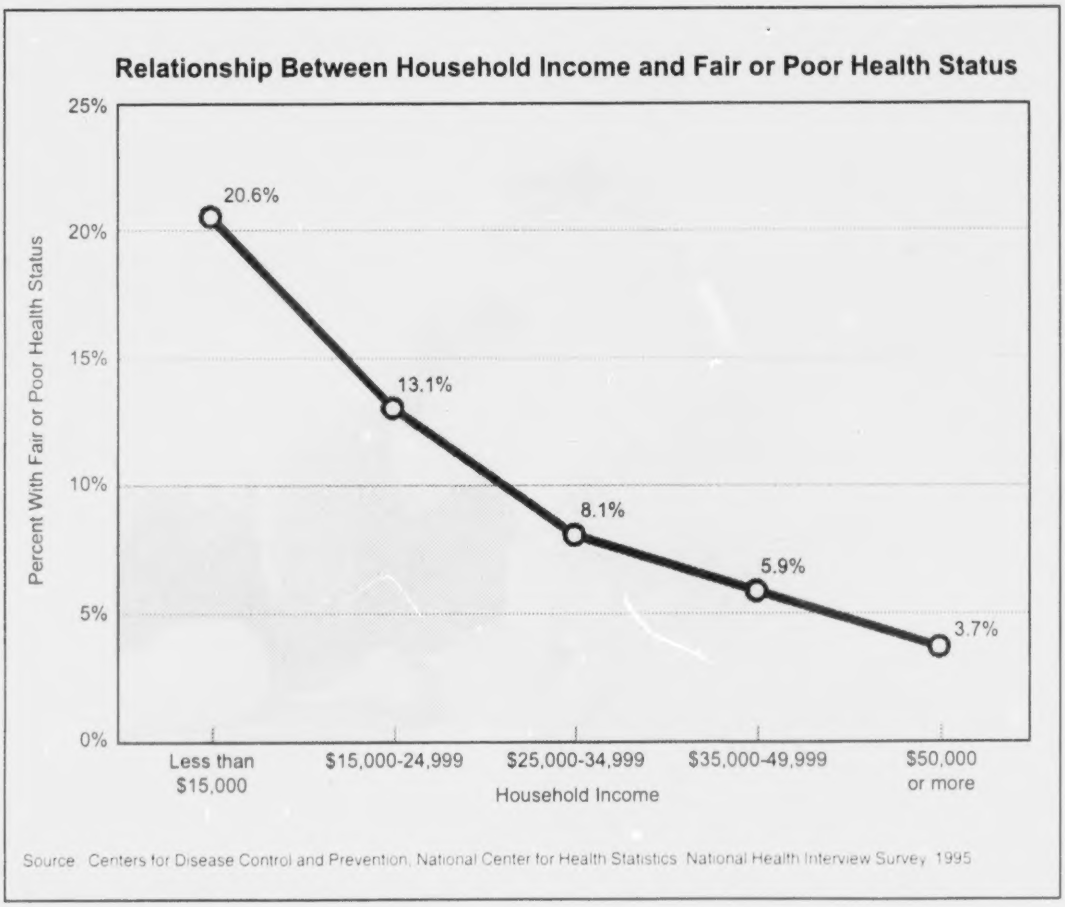
Years of healthy life is a combined measure developed for the Healthy People initiative. The difference between life expectancy and years of healthy life reflects the average amount of time spent in less than optimal health because of chronic or acute limitations. After decreasing in the early 1990s, years of healthy life increased to a level in 1996 that was only slightly above that at the beginning of the decade (64.0 years in 1990 to 64.2 years in 1996). During the same period, life expectancy increased a full year.

As with life expectancy, various population groups can show dramatic differences in quality of life. For example, people in the lowest income households are five times more likely to report their health as fair or poor than people in the highest income households (see figure 3). A higher percentage of women report their health as fair or poor compared to men. Adults in rural areas are 36 percent more likely to report their health status as fair or poor than are adults in urban areas.

Achieving a Longer and Healthier Life—the Healthy People Perspective

Healthy People 2010 seeks to increase life expectancy and quality of life over the next 10 years by helping individuals gain the knowledge, motivation, and opportunities they need to make informed decisions about their health. At the same time, Healthy People 2010 encourages local and State leaders to develop communitywide and statewide efforts that promote healthy behaviors, create healthy environments, and increase access to high-quality health care. Given the fact that individual and community health are virtually inseparable, it is critical that both the individual and the community do their parts to increase life expectancy and improve quality of life.

Figure 3. Percentage of persons with fair or poor perceived health status by household income, United States, 1995.



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey, 1995.

Goal 2: Eliminate Health Disparities

The second goal of Healthy People 2010 is to eliminate health disparities among different segments of the population. These include differences that occur by gender, race or ethnicity, education or income, disability, living in rural localities, or sexual orientation. This section highlights ways in which health disparities can occur among various demographic groups in the United States.

Gender

Whereas some differences in health between men and women are the result of biological differences, others are more complicated and require greater attention and scientific exploration. Some health differences are obviously gender specific, such as cervical and prostate cancers.

Overall, men have a life expectancy that is 6 years less than women and have higher death rates for each of the 10 leading causes of death. For example, men are two times more likely than women to die from unintentional injuries and four times more likely than women to die from firearm-related injuries. Although overall death rates for women may currently be lower than for men, women have shown increased death rates over the past decade in areas where men have experienced improvements, such as lung cancer. Women are also at greater risk for Alzheimer's disease than men and twice as likely as men to be affected by major depression.

Race and Ethnicity

Current information about the biologic and genetic characteristics of African Americans, Hispanics, American Indians, Alaska Natives, Asians, Native Hawaiians, and Pacific Islanders does not explain the health disparities experienced by these groups compared with the white, non-Hispanic population in the United States. These disparities are believed to be the result of the complex interaction among genetic variations, environmental factors, and specific health behaviors.

Even though the Nation's infant mortality rate is down, the infant death rate among African Americans is still more than double that of whites. Heart disease death rates are more than 40 percent higher for African Americans than for whites. The death rate for all cancers is 30 percent higher for African Americans than for whites; for prostate cancer, it is more than double that for whites. African American women have a higher death rate from breast cancer despite having a mammography screening rate that is higher than that for white women. The death rate from HIV/AIDS for African Americans is more than seven times that for whites; the rate of homicide is six times that for whites.

Hispanics living in the United States are almost twice as likely to die from diabetes than are non-Hispanic whites. Although constituting only 11 percent of the total population in 1996, Hispanics accounted for 20 percent of the new cases of tuberculosis. Hispanics also have higher rates of high blood pressure and obesity than non-Hispanic whites. There are differences among Hispanic populations as well. For example, whereas the rate of low-birth-weight infants is lower for the total Hispanic population compared with whites, Puerto Ricans have a low-birth-weight rate that is 50 percent higher than that for whites.

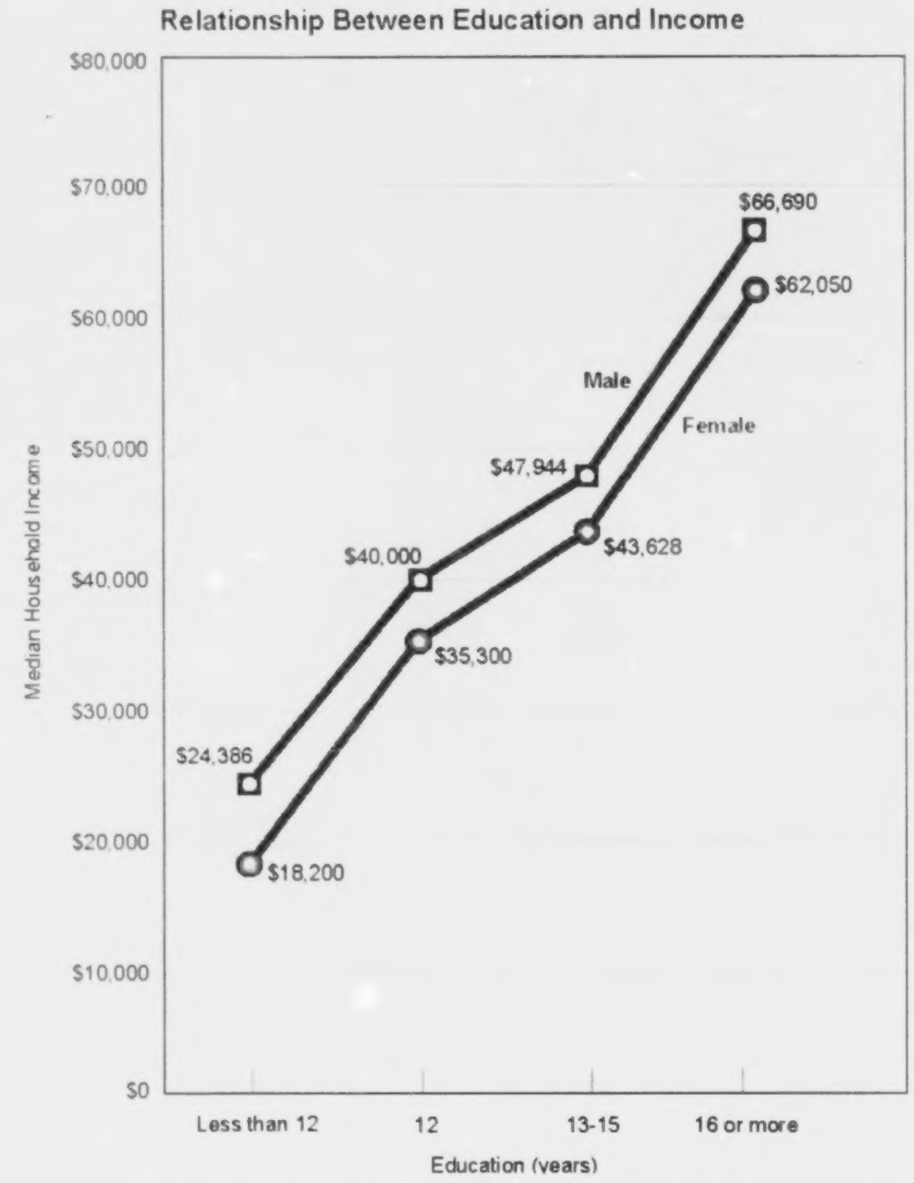
American Indians and Alaska Natives have an infant death rate almost double that for whites. The rate of diabetes for this population group is more than twice that for whites. The Pima of Arizona have one of the highest rates of diabetes in the world. American Indians and Alaska Natives also have disproportionately high death rates from unintentional injuries and suicide.

Asians and Pacific Islanders, on average, have indicators of being one of the healthiest population groups in the United States. However, there is great diversity within this population group, and health disparities for some specific groups are quite marked. Women of Vietnamese origin, for example, suffer from cervical cancer at nearly five times the rate for white women. New cases of hepatitis and tuberculosis are also higher in Asians and Pacific Islanders living in the United States than in whites.

Income and Education

Inequalities in income and education underlie many health disparities in the United States. Income and education are intrinsically related and often serve as proxy measures for each other (see figure 4). In general, population groups that suffer the worst health status are also those that have the highest poverty rates and least education. Disparities in income and education levels are associated with differences in the occurrence of illness and death, including heart disease, diabetes, obesity, elevated blood lead level, and low birth weight. Higher incomes permit increased access to medical care, enable one to afford better housing and live in safer neighborhoods, and increase the opportunity to engage in health-promoting behaviors.

Figure 4. Relationship between education and median household income among adults 25 years and older, by gender, United States, 1996



Source: U.S. Department of Commerce, Bureau of the Census. Current Population Survey. March 1997.

Income inequality in the United States has increased over the past three decades. There are distinct demographic differences in poverty by race, ethnicity, and household composition (see figure 5) as well as geographical variations in poverty across the United States. Recent health gains for the U.S. population as a whole appear to reflect achievements among the higher socioeconomic groups; lower socioeconomic groups continue to lag behind.

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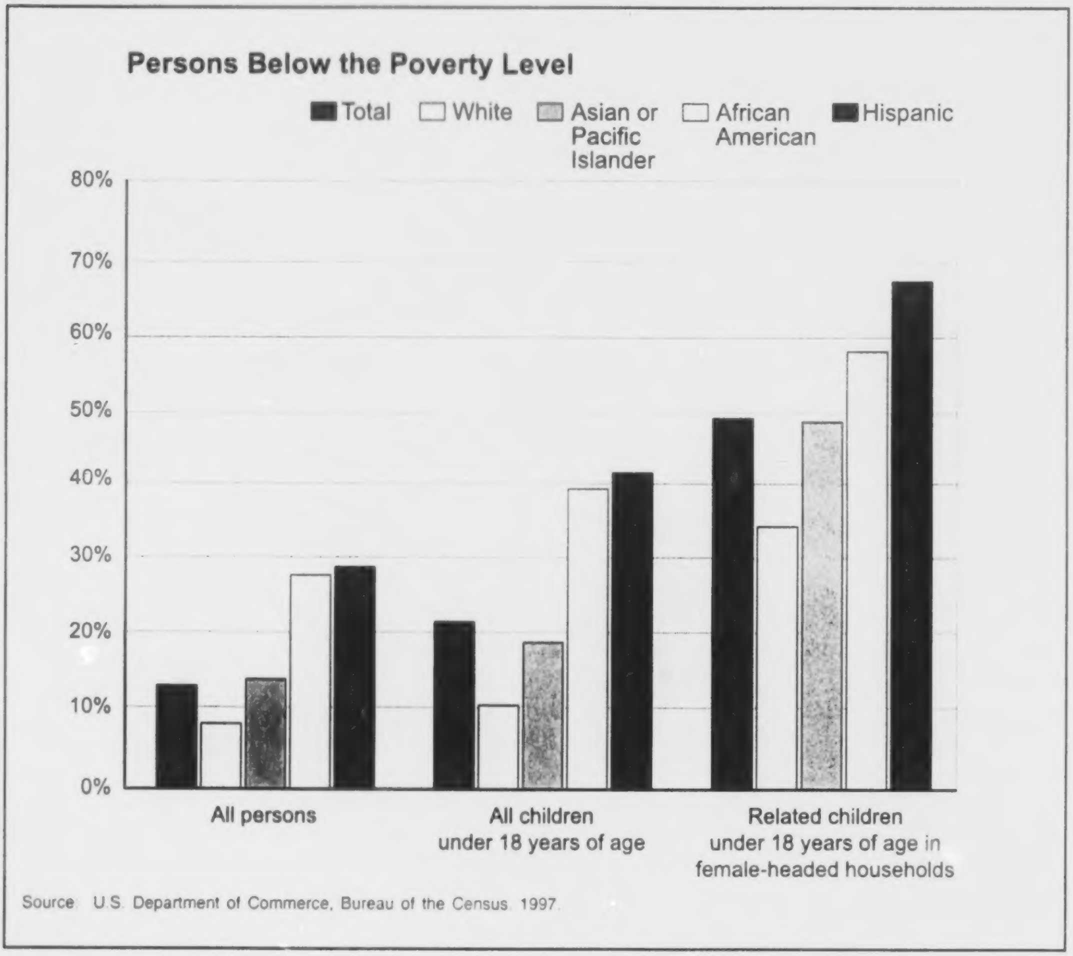
Figure 5. Percentage of persons below the poverty level by race/ethnic group and type of household, United States, 1996

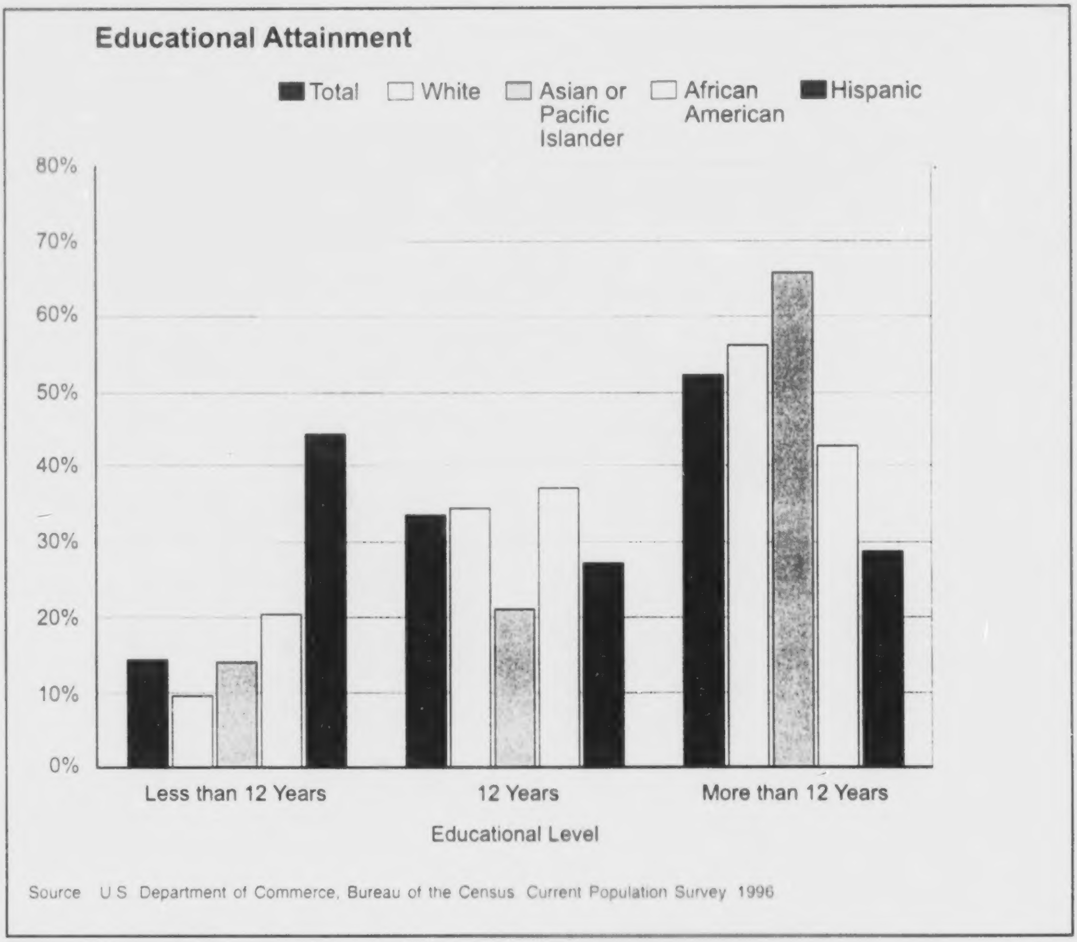


Source: U.S. Department of Commerce, Bureau of the Census. 1997.

Overall, those with higher incomes tend to fare better than those with lower incomes. For example, among white men aged 65 years, those in the highest income families could expect to live more than 3 years longer than those in the lowest income families. The percentage of people in the lowest income families reporting limitation in activity caused by chronic disease is three times that of people in the highest income families.

The average level of education in the U.S. population has steadily increased over the past several decades—an important achievement given that more years of education usually translate into more years of life. For women, the amount of education achieved is a key determinant of the welfare and survival of their children. Higher levels of education may also increase the likelihood of obtaining or understanding health-related information needed to develop health-promoting behaviors and beliefs in prevention.

Figure 6. Percentage of adults aged 25 to 64 years by educational level, race and ethnicity, United States, 1996



Source: U.S. Department of Commerce, Bureau of the Census. Current Population Survey. 1996

But again, educational attainment differs by race and ethnicity (figure 6). Among people aged 25 to 64 years in the United States, the overall death rate for those with less than 12 years of education is more than twice that for people with 13 or more years of education. The infant mortality rate is almost double for infants of mothers with less than 12 years of education when compared with those with an education of 13 or more years.

Disability

People with disabilities are identified as persons having an activity limitation, who use assistance, or who perceive themselves as having a disability. In 1994, 54 million people in the United States, or roughly 21 percent of the population, had some level of disability. Although rates of disability are relatively stable or falling slightly for people aged 45 years and older, rates are on the rise among the younger population. People with disabilities tend to report more anxiety, pain, sleeplessness, and days of depression and fewer days of vitality than do people without activity limitations. People with disabilities also have other disparities, including lower rates of physical activity and higher rates of obesity. Many people with disabilities lack access to health services and medical care.

Rural Localities

Twenty-five percent of Americans live in rural areas, that is, places with fewer that 2,500 residents. Injury-related death rates are 40 percent higher in rural populations than in urban populations. Heart disease, cancer, and diabetes rates exceed those for urban areas. People living in rural areas are less likely to use preventive screening services, exercise regularly, or wear seat belts. In 1996, 20 percent of the rural population was uninsured compared with 16 percent of the urban population. Timely access to emergency services and the availability of specialty care are other issues for this population group.

Sexual Orientation

America's gay and lesbian population comprises a diverse community with disparate health concerns. Major health issues for gay men are HIV/AIDS and other sexually transmitted diseases, substance abuse, depression, and suicide. Gay male adolescents are two to three times more likely than their peers to attempt suicide. Some evidence suggests lesbians have higher rates of smoking, obesity, alcohol abuse, and stress than heterosexual women. The issues surrounding personal, family, and social acceptance of sexual orientation can place a significant burden on mental health and personal safety.

Achieving Equity—The Healthy People Perspective

Although the diversity of the American population may be one of our Nation's greatest assets, diversity also presents a range of health improvement challenges—challenges that must be addressed by individuals, the community and State in which they live, and the Nation as a whole.

Healthy People 2010 recognizes that communities, States, and national organizations will need to take a multidisciplinary approach to achieving health equity that involves improving health, education, housing, labor, justice, transportation, agriculture, and the environment. However, our greatest opportunities for reducing health disparities are in empowering individuals to make informed health care decisions and in promoting communitywide safety, education, and access to health care.

Healthy People 2010 is firmly dedicated to the principle that—regardless of age, gender, race, ethnicity, income, education, geographic location, disability, and sexual orientation—every person in every community across the Nation deserves equal access to comprehensive, culturally competent, community-based health care systems that are committed to serving the needs of the individual and promoting community health.

Objectives

The Nation's progress in achieving the two goals of Healthy People 2010 will be monitored through 467 objectives in 28 focus areas. Many objectives focus on interventions designed to reduce or eliminate illness, disability, and premature death among individuals and communities. Others focus on broader issues, such as improving access to quality health care, strengthening public health services, and improving the availability and dissemination of health-related information. Each objective has a target for specific improvements to be achieved by the year 2010.

Together, these objectives reflect the depth of scientific knowledge as well as the breadth of diversity in the Nation's communities. More importantly, they are designed to help the Nation achieve its two overarching goals and realize the vision of healthy people living in healthy communities.

A list of the short titles of all Healthy People 2010 objectives by focus area can be found in the Appendix. In addition, *Healthy People 2010: Objectives for Improving Health* provides an overview of the issues, trends, and opportunities for action in each of the 28 focus areas. It also contains detailed language of each objective, the rationale behind its focus, the target for the year 2010, and national data tables of its measures.

Healthy People 2010 Focus Areas

1. Access to Quality Health Services
2. Arthritis, Osteoporosis, and Chronic Back Conditions
3. Cancer
4. Chronic Kidney Disease
5. Diabetes
6. Disability and Secondary Conditions
7. Educational and Community-Based Programs
8. Environmental Health
9. Family Planning
10. Food Safety
11. Health Communication
12. Heart Disease and Stroke
13. HIV
14. Immunization and Infectious Diseases
15. Injury and Violence Prevention
16. Maternal, Infant, and Child Health
17. Medical Product Safety
18. Mental Health and Mental Disorders
19. Nutrition and Overweight
20. Occupational Safety and Health
21. Oral Health
22. Physical Activity and Fitness
23. Public Health Infrastructure
24. Respiratory Diseases
25. Sexually Transmitted Diseases
26. Substance Abuse
27. Tobacco Use
28. Vision and Hearing

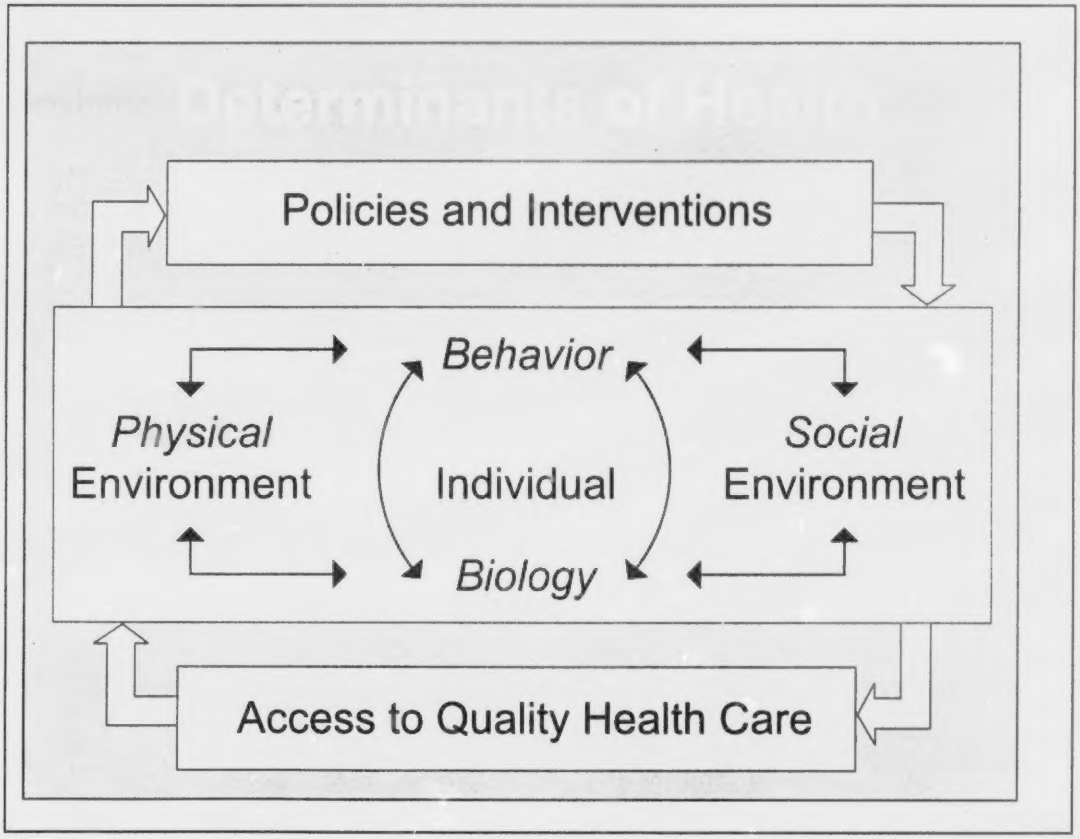
Determinants of Health

The depth of topics covered by the objectives in Healthy People 2010 reflect the array of critical influences that determine the health of individuals and communities.

For example, individual behaviors and environmental factors are responsible for about 70 percent of all premature deaths in the United States. Developing and implementing policies and preventive interventions that effectively address these determinants of health can reduce the burden of illness, enhance quality of life, and increase longevity.

Individual *biology* and *behaviors* influence health through their interaction with each other and with the individual's *social* and *physical environments*. In addition, *policies and interventions* can improve health by targeting factors related to individuals and their environments, including *access to quality health care* (see figure 7).

Figure 7. Determinants of Health


Policies and Interventions
Behavior
Physical Environment
Individual
Social Environment
Biology
Access to Quality Health Care

Biology refers to the individual's genetic makeup (those factors with which he or she is born), family history (which may suggest risk for disease), and the physical and mental health problems acquired during life. Aging, diet, physical activity, smoking, stress, alcohol or illicit drug abuse, injury or violence, or an infectious or toxic agent may result in illness or disability and can produce a "new" biology for the individual.

Behaviors are individual responses or reactions to internal stimuli and external conditions. Behaviors can have a reciprocal relationship to biology; in other words, each can react to the other. For example, smoking (behavior) can alter the cells in the lung and result in shortness of breath, emphysema, or cancer (biology) that may then lead an individual to stop smoking (behavior). Similarly, a family history that includes heart disease (biology) may motivate an individual to develop good eating habits, avoid tobacco, and maintain an active lifestyle (behaviors), which may prevent his or her own development of heart disease (biology).

Personal choices and the social and physical environments surrounding individuals can shape behaviors. The social and physical environments include all factors that affect the life of individuals, positively or negatively, many of which may not be under their immediate or direct control.

The **social environment** includes interactions with family, friends, coworkers, and others in the community. It also encompasses social institutions, such as law enforcement, the workplace, places of worship, and schools. Housing, public transportation, and the presence or absence of violence in the community are among other components of the social environment. The social environment has a profound effect on individual health, as well as on the health of the larger community, and is unique because of cultural customs; language; and personal, religious, or spiritual beliefs. At the same time, individuals and their behaviors contribute to the quality of the social environment.

The **physical environment** can be thought of as that which can be seen, touched, heard, smelled, and tasted. However, the physical environment also contains less tangible elements, such as radiation and ozone. The physical environment can harm individual and community health, especially when individuals and communities are exposed to toxic substances; irritants; infectious agents; and physical hazards in homes, schools, and worksites. The physical environment can also promote good health, for example, by providing clean and safe places for people to work, exercise, and play.

Policies and interventions can have a powerful and positive effect on the health of individuals and the community. Examples include health promotion campaigns to prevent smoking; policies mandating child restraints and seat belt use in automobiles; disease prevention services, such as immunization of children, adolescents, and adults; and clinical services, such as enhancing mental health care. Policies and interventions that promote individual and community health may be implemented by a variety of agencies, such as transportation, education, energy, housing, labor, justice, and other venues, or through places of worship, community-based organizations, civic groups, and businesses.

The health of individuals and communities also depends greatly on **access to quality health care**. Expanding access to quality health care is important to eliminate health disparities and to increase the quality and years of healthy life for all people living in the United States. Health care in the broadest sense not only includes services received through health care providers but also health information and services received through other venues in the community.

The determinants of health—individual biology and behavior, the physical and social environments, policies and interventions, and access to quality health care—have a profound effect on the health of individuals, communities, and the Nation. An evaluation of these determinants is an important part of developing any strategy to improve health.

Our understanding of these determinants and how they relate to one another, coupled with our understanding of how individual and community health determines the health of the Nation, is perhaps the most important key to achieving our Healthy People 2010 goals of increasing the quality and years of life and of eliminating the Nation's health disparities.

Health Status

To completely understand the health status of a population, it is essential to monitor and evaluate the consequences of the determinants of health.

The health status of the United States is a description of the health of the total population using information that is representative of most people living in this country. For relatively small population groups, however, it may not be possible to draw accurate conclusions about their health using current data collection methods. The goal of eliminating health disparities will necessitate improved collection and use of standardized data to correctly identify disparities among select population groups.

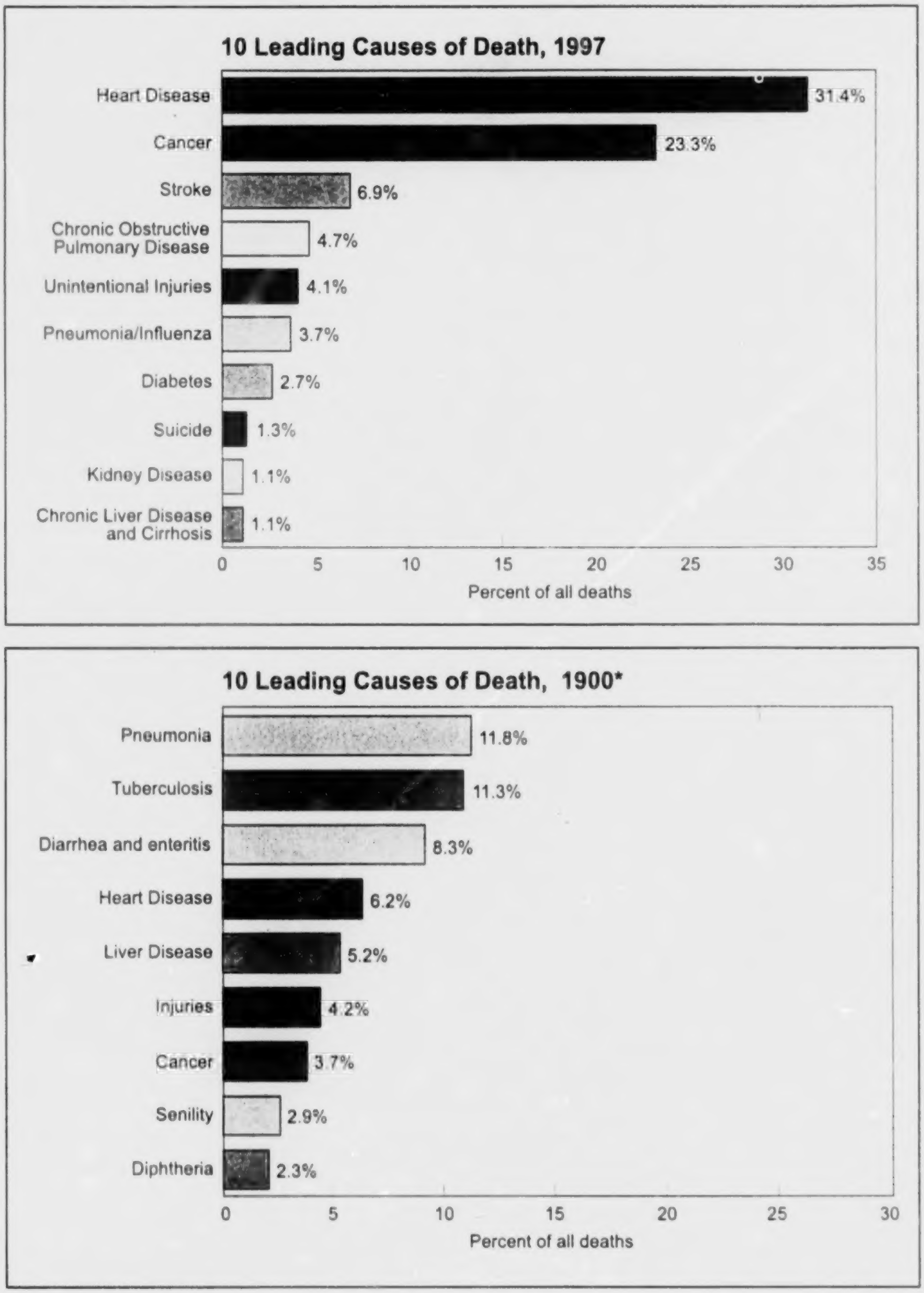
Health status can be measured by birth and death rates, life expectancy, quality of life, morbidity from specific diseases, risk factors, use of ambulatory care and inpatient care, accessibility of health personnel and facilities, financing of health care, health insurance coverage, and many other factors. The information used to report health status comes from a variety of sources, including birth and death records; hospital discharge data; and health information collected from health care records, personal interviews, physical examinations, and telephone surveys. These measures are monitored on an annual basis in the United States and are reported in a variety of publications, including *Health, United States* and *Healthy People Reviews.*

The leading causes of death are frequently used to describe the health status of the Nation. The Nation has seen a great deal of change over the past 100 years in the leading causes of death (see figure 8). At the beginning of the 1900s, infectious diseases ran rampant in the United States and worldwide and topped the leading causes of death. A century later, with the control of many infectious agents and the increasing age of the population, chronic diseases top the list.

A very different picture emerges when the leading causes of death are viewed for various subgroups. Unintentional injuries, mainly motor vehicle crashes, are the fifth leading cause of death for the total population, but they are the leading cause of death for people aged 1 to 44 years. Similarly, HIV/AIDS is the 14th leading cause of death for the total population but the leading cause of death for African American men aged 25 to 44 years (figure 9).

The leading causes of death in the United States generally result from a mix of behaviors; injury, violence, and other factors in the environment; and the unavailability or inaccessibility of quality health services. Understanding and monitoring behaviors, environmental factors, and community health systems may prove more useful to monitoring the Nation's *true* health, and in driving health improvement activities, than the death rates that reflect the cumulative impact of these factors. This approach has served as the basis for developing the Leading Health Indicators.

Figure 8. The 10 leading causes of death as a percentage of all deaths in the United States, 1900 and 1997



10 Leading Causes of Death, 1997

10 Leading Causes of Death, 1900*

*Not all States are represented.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System and unpublished data. 1997.

Figure 9. The 3 leading causes of death by age group, United States, 1997

Leading Causes of Death by Age Group

Younger Than 1 Year	Number of Deaths
Birth defects	6,178
Disorders related to premature birth	3,925
Sudden infant death syndrome	2,991
1-4 Years	
Unintentional Injuries	2,005
Birth defects	589
Cancer	438
5-14 Years	
Unintentional Injuries	3,371
Cancer	1,030
Homicide	457
15-24 Years	
Unintentional Injuries	13,367
Homicide	6,146
Suicide	4,186
25-44 Years	
Unintentional Injuries	27,129
Cancer	21,706
Heart disease	16,513
45-64 Years	
Cancer	131,743
Heart disease	101,235
Unintentional Injuries	17,521
65 Years and Older	
Heart disease	606,913
Cancer	382,913
Stroke	140,366

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics Systems, 1999.

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Leading Health Indicators

The Leading Health Indicators reflect the major public health concerns in the United States and were chosen based on their ability to motivate action, the availability of data to measure their progress, and their relevance as broad public health issues.

The Leading Health Indicators illuminate individual behaviors, physical and social environmental factors, and important health system issues that greatly affect the health of individuals and communities. Underlying each of these indicators is the significant influence of income and education (see Income and Education, page 12).

The process of selecting the Leading Health Indicators mirrored the collaborative and extensive efforts undertaken to develop Healthy People 2010. The process was led by an interagency work group within the U.S. Department of Health and Human Services. Individuals and organizations provided comments at national and regional meetings or via mail and the Internet. A report by the Institute of Medicine, National Academy of Sciences, provided several scientific models on which to support a set of indicators. Focus groups were used to ensure that the indicators are meaningful and motivating to the public.

Leading Health Indicators

- **Physical activity**
- **Overweight and obesity**
- **Tobacco use**
- **Substance abuse**
- **Responsible sexual behavior**
- **Mental health**
- **Injury and violence**
- **Environmental quality**
- **Immunization**
- **Access to health care**

For each of the Leading Health Indicators, specific objectives derived from Healthy People 2010 will be used to track progress. This small set of measures will provide a snapshot of the health of the Nation. Tracking and communicating progress on the Leading Health Indicators through national- and State-level report cards will spotlight achievements and challenges in the next decade. The Leading Health Indicators serve as a link to the 467 objectives in *Healthy People 2010: Objectives for Improving Health* and can become the basic building blocks for community health initiatives.

A major challenge throughout the history of Healthy People has been to balance a comprehensive set of health objectives with a smaller set of health priorities.

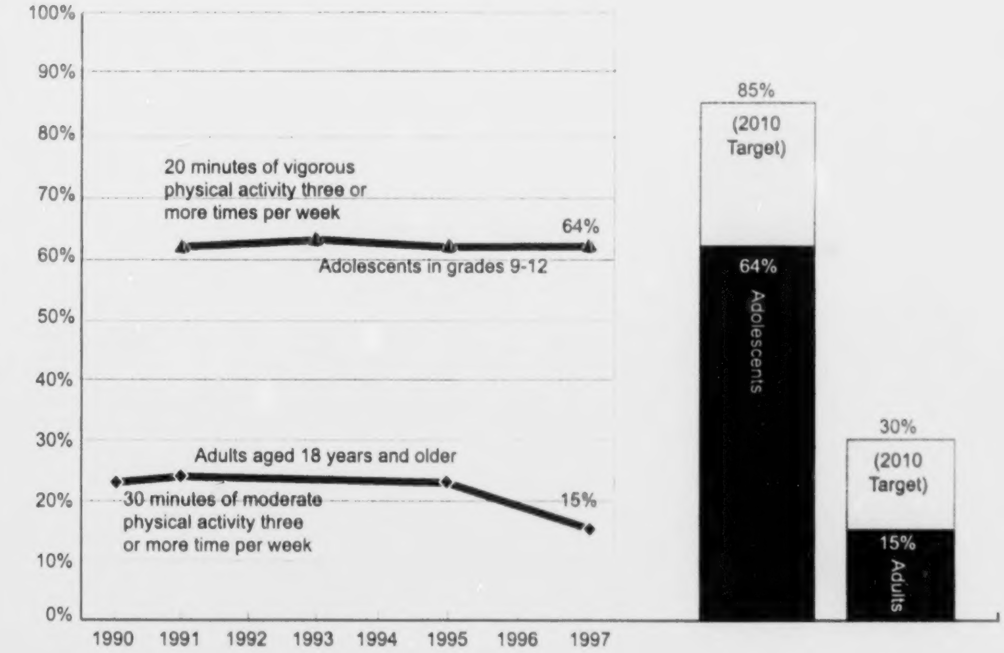
The Leading Health Indicators are intended to help everyone more easily understand the importance of health promotion and disease prevention and to encourage wide participation in improving health in the next decade. Developing strategies and action plans to address one or more of these indicators can have a profound effect on increasing the quality of life and the years of healthy life and on eliminating health disparities—creating *healthy people in healthy communities.*

Physical Activity

Regular physical activity throughout life is important for maintaining a healthy body, enhancing psychological well-being, and preventing premature death.

In 1997, 64 percent of adolescents engaged in the recommended amount of physical activity. In the same year, only 15 percent of adults performed the recommended amount of physical activity and 40 percent of adults engaged in no leisure-time physical activity.

Participation in regular physical activity, United States, 1990-1997



Source: Centers for Disease Control and Prevention, Youth Risk Behavior Survey, 1991-1997. Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 1990-1997.

The objectives selected to measure progress among adolescents and adults for this Leading Health Indicator are presented below. These are only indicators and do not represent all the physical activity and fitness objectives included in Healthy People 2010.

22-7. Increase the proportion of adolescents who engage in vigorous physical activity that promotes cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion.

22-2. Increase the proportion of adults who engage regularly, preferably daily, in moderate physical activity for at least 30 minutes per day.

Health Impact of Physical Activity

Regular physical activity is associated with lower death rates for adults of any age, even when only moderate levels of physical activity are performed. Regular physical activity decreases the risk of death from heart disease, lowers the risk of developing diabetes, and is associated with a decreased risk of colon cancer. Regular physical activity helps prevent high blood pressure and helps reduce blood pressure in persons with elevated levels.

Regular physical activity also:

- Increases muscle and bone strength
- Increases lean muscle and helps decrease body fat
- Aids in weight control and is a key part of any weight loss effort
- Enhances psychological well-being and may even reduce the risk of developing depression
- Appears to reduce symptoms of depression and anxiety and to improve mood

In addition, children and adolescents need weight-bearing exercise for normal skeletal development, and young adults need such exercise to achieve and maintain peak bone mass. Older adults can improve and maintain strength and agility with regular physical activity. This can reduce the risk of falling, helping older adults maintain an independent living status. Regular physical activity also increases the ability of people with certain chronic, disabling conditions to perform activities of daily living.

Populations With Low Rates of Physical Activity

- Women are less active than men at all ages.
- People with lower incomes and less education are typically not as physically active as those with higher incomes and education.
- African Americans and Hispanics are generally less physically active than whites.
- Adults in northeastern and southern States tend to be less active than adults in north-central and western States.
- People with disabilities are less physically active than people without disabilities.
- By age 75, one in three men and one in two women engage in *no* regular physical activity.

Other Issues

The major barriers most people face when trying to increase physical activity are lack of time, access to convenient facilities, and safe environments in which to be active.

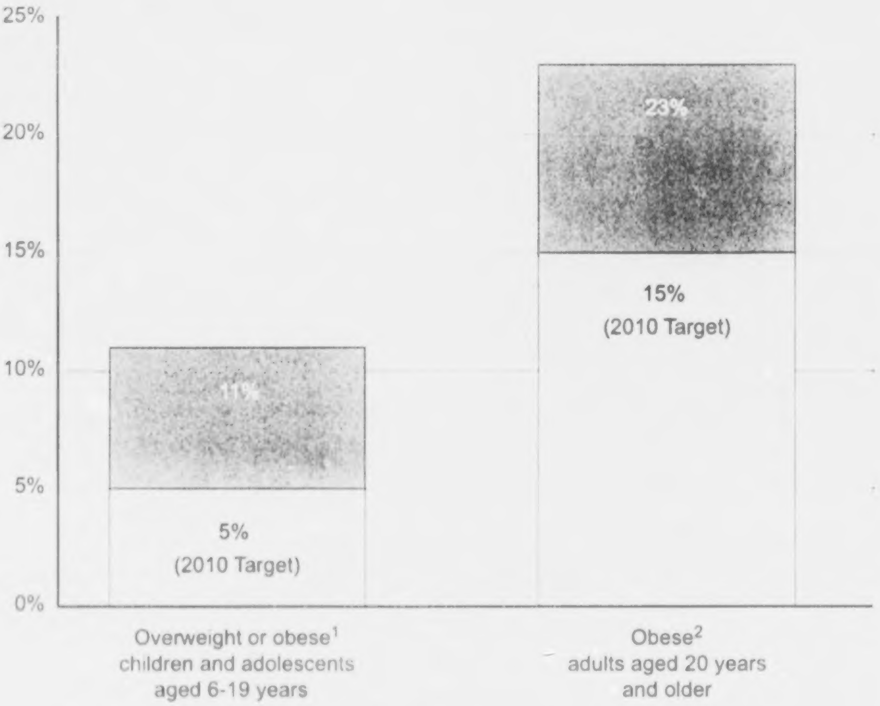
For more information on Healthy People 2010 objectives or on physical activity and fitness, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

Overweight and Obesity

Overweight and obesity are major contributors to many preventable causes of death. On average, higher body weights are associated with higher death rates. The number of overweight children, adolescents, and adults has risen over the past four decades. Total costs (medical cost and lost productivity) attributable to obesity alone amounted to an estimated $99 billion in 1995.

During 1988-1994, 11 percent of children and adolescents aged 6 to 19 years were overweight or obese. During the same years, 23 percent of adults aged 20 and older were considered obese.

Overweight and obesity, United States, 1988-1994



[1] In those aged 6 to 19 years, overweight or obesity is defined as at or above the sex- and age- specific 95th percentile of Body Mass Index (BMI) based on a preliminary analysis of data used to construct the year 2000 U.S. Growth Charts (provisional data)

[2] In adults, obesity is defined as a BMI of 30 kg/m^2 or more, overweight is a BMI of 25 kg/m^2 or more

Body Mass Index (BMI) is calculated as weight in kilograms (kg) divided by the square of height in meters (m^2) (BMI = weight[kg]/height[m^2]) To estimate BMI using pounds (lbs) and inches (in), divide weight in pounds by the square of height in inches Then multiply the resulting number by 704.5 (BMI = weight[lbs]/height[in^2] X 704.5)

Source Centers for Disease Control and Prevention, National Center for Health Statistics National Health and Nutrition Examination Survey 1988-1994

The objectives selected to measure progress among children, adolescents, and adults for this Leading Health Indicator are presented below. These are only indicators and do not represent all the nutrition and overweight objectives included in Healthy People 2010.

19-3c. Reduce the proportion of children and adolescents who are overweight or obese.
19-2. Reduce the proportion of adults who are obese.

Health Impact of Overweight and Obesity

Overweight and obesity substantially raise the risk of illness from high blood pressure; high cholesterol; Type 2 diabetes; heart disease and stroke; gallbladder disease; arthritis; sleep disturbances and problems breathing; and endometrial, breast, prostate, and colon cancers.

Obese individuals may also suffer from social stigmatization, discrimination, and lowered self-esteem.

Populations With High Rates of Overweight and Obesity

An estimated 107 million adults in the United States are overweight or obese. The proportion of adolescents from poor households who are overweight is almost twice that of adolescents from middle- and high-income households. Overweight is especially prevalent among women with lower incomes and less education. Obesity is more common among African American and Hispanic women than among white women. Among African Americans, the proportion of women who are obese is 80 percent higher than the proportion of men who are obese. This gender difference is also seen among Hispanic women and men, but the percentage of white, non-Hispanic women and men who are obese is about the same.

Reducing Overweight and Obesity

The development of obesity is a complex result of a variety of social, behavioral, cultural, environmental, physiological, and genetic factors. For example, a healthy diet and regular physical activity are both important for maintaining a healthy weight. Once overweight is established during adolescence, it is likely to remain in adulthood. For many overweight and obese individuals, substantial change in eating, shopping, exercising, and even social behaviors may be necessary to develop a healthier lifestyle.

Other Important Nutrition Issues

The quality of food consumed in terms of the proportion of calories from fat, protein, and carbohydrate sources; salt, mineral, and vitamin content; and amount of dietary fiber plays a critical role in disease prevention. The *Dietary Guidelines for Americans* recommend that, to stay healthy, one should eat a variety of foods and choose a diet that is plentiful in grain products, vegetables, and fruits; moderate in salt, sodium, and sugars; and low in fat, saturated fat, and cholesterol.

Nutritional Challenges

Although much progress has been made in making nutrition information available and in providing reduced-fat foods and other healthful food choices in supermarkets, challenges remain. One challenge is the composition of foods eaten away from home. As much as 40 percent of a family's food budget is spent in restaurants and on carry-out meals. Foods eaten away from home are generally higher in fat, saturated fat, cholesterol, and sodium and are lower in fiber and calcium than foods prepared and eaten at home.

For more information on Healthy People 2010 objectives or on nutrition and overweight, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

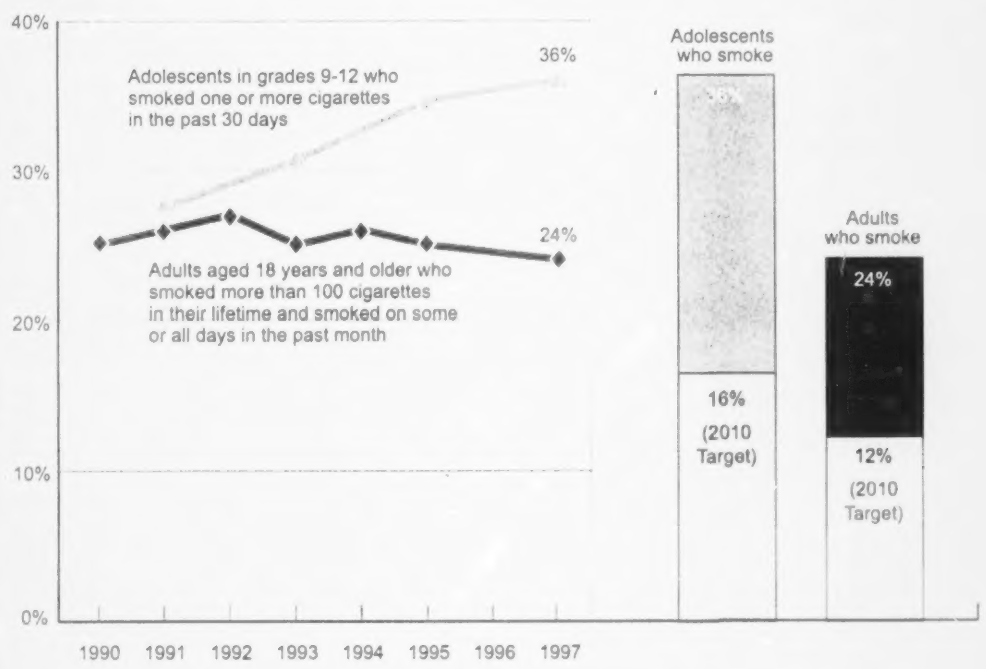
Tobacco Use

Cigarette smoking is the single most preventable cause of disease and death in the United States. Smoking results in more deaths each year in the United States than AIDS, alcohol, cocaine, heroin, homicide, suicide, motor vehicle crashes, and fires—combined.

Tobacco-related deaths number more than 430,000 per year among U.S. adults, representing more than 5 million years of potential life lost. Direct medical costs attributable to smoking total at least $50 billion per year.

In 1997, 36 percent of adolescents were current smokers. In the same year, 24 percent of adults were current smokers.

Cigarette smoking, United States, 1990-1997



Source Centers for Disease Control and Prevention Youth Risk Behavior Survey 1991-1997
Centers for Disease Control and Prevention, National Center for Health Statistics National Health Interview Survey 1990-1997

The objectives selected to measure progress among adolescents and adults for this Leading Health Indicator are presented below. These are only indicators and do not represent all the tobacco use objectives included in Healthy People 2010.

27-3b. Reduce cigarette smoking by adolescents.
27-1a. Reduce cigarette smoking by adults.

Health Impact of Cigarette Smoking

Smoking is a major risk factor for heart disease, stroke, lung cancer, and chronic lung diseases—all leading causes of death. Smoking during pregnancy can result in miscarriages, premature delivery, and sudden infant death syndrome. Other health effects of smoking result from injuries and environmental damage caused by fires.

Environmental tobacco smoke (ETS) increases the risk of heart disease and significant lung conditions, especially asthma and bronchitis in children. ETS is responsible for an estimated 3,000 lung cancer deaths each year among adult nonsmokers.

Trends in Cigarette Smoking

Adolescents. Overall, the percentage of adolescents in grades 9 through 12 who smoked in the past month increased in the 1990s. Every day, an estimated 3,000 young persons start smoking. These trends are disturbing because the vast majority of adult smokers tried their first cigarette before age 18 years; more than half of adult smokers became daily smokers before this same age. Almost half of adolescents who continue smoking regularly will eventually die from a smoking-related illness.

Adults. Following years of steady decline, rates of smoking among adults appear to have leveled off in the 1990s.

Populations With High Rates of Smoking

Adolescents. Adolescent rates of cigarette smoking have increased in the 1990s among white, African American, and Hispanic high school students after years of declining rates during the 1970s and 1980s. In 1997, 40 percent of white high school students currently smoked cigarettes compared with 34 percent for Hispanics and 23 percent for African Americans. Among African Americans in 1997 only 17 percent of high school girls, compared with 28 percent of boys, currently smoked cigarettes. Rates of smoking cigarettes in white and Hispanic high school girls and boys are not substantially different.

Adults. Overall, American Indians and Alaska Natives, blue-collar workers, and military personnel have the highest rates of smoking in adults. Rates of smoking in Asian and Pacific Islander men are more than four times higher than for women of the same race. Men have only somewhat higher rates of smoking than women within the total U.S. population. Low-income adults are about twice as likely to smoke as are high-income adults. The percentage of people aged 25 years and older with less than 12 years of education who are current smokers is nearly three times that for persons with 16 or more years of education.

Other Important Tobacco Issues

There is no safe tobacco alternative to cigarettes. Spit tobacco (chew) causes cancer of the mouth, inflammation of the gums, and tooth loss. Cigar smoking causes cancer of the mouth, throat, and lungs and can increase the risk of heart disease and chronic lung problems.

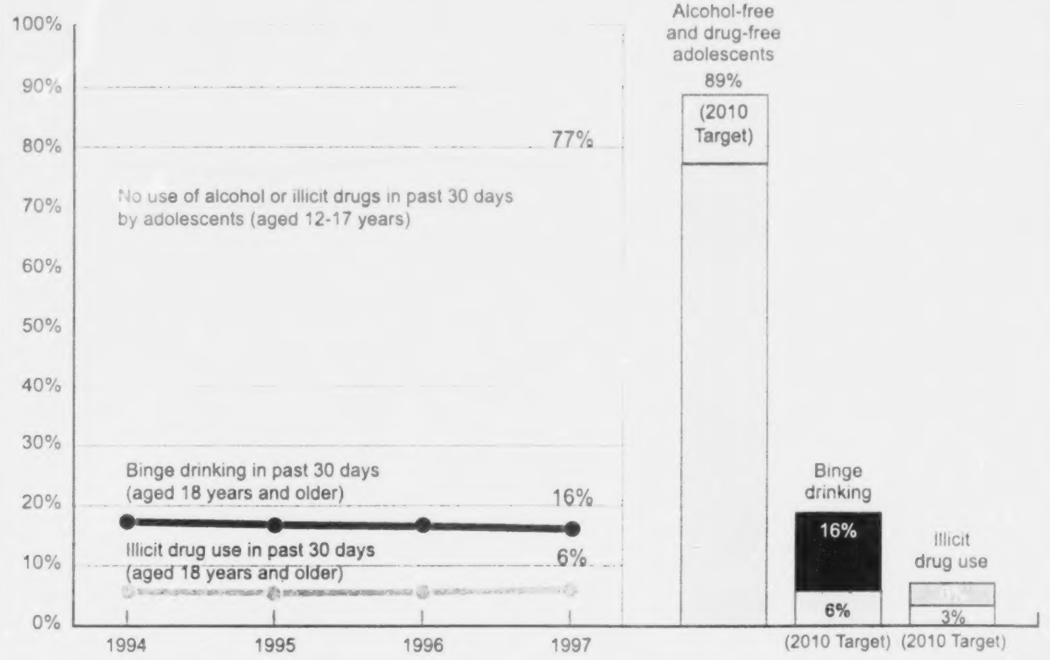
For more information on Healthy People 2010 objectives or on tobacco use, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

Substance Abuse

Alcohol and illicit drug use are associated with many of this country's most serious problems, including violence, injury, and HIV infection. The annual economic costs to the United States from alcohol abuse were estimated to be $167 billion in 1995, and the costs from drug abuse were estimated to be $110 billion.

In 1997, 77 percent of adolescents aged 12 to 17 years reported that they did *not* use alcohol or illicit drugs in the past month. In the same year, 6 percent of adults aged 18 years and older reported using illicit drugs in the past month; 16 percent reported binge drinking in the past month, which is defined as consuming five or more drinks on one occasion.

Use of alcohol and/or illicit drugs, United States, 1994-1997



Source: Substance Abuse and Mental Health Services Administration, Office of the Assistant Secretary. National Household Survey on Drug Abuse, 1994-1997.

The objectives selected to measure progress among adolescents and adults for this Leading Health Indicator are presented below. These are only indicators and do not represent all the substance abuse objectives in Healthy People 2010.

26-10a. Increase the proportion of adolescents not using alcohol or any illicit drugs during the past 30 days.

26-10c. Reduce the proportion of adults using any illicit drug during the past 30 days.

26-11c. Reduce the proportion of adults engaging in binge drinking of alcoholic beverages during the past month.

Health Impact of Substance Abuse

Alcohol and illicit drug use are associated with child and spousal abuse; sexually transmitted diseases, including HIV infection; teen pregnancy; school failure; motor vehicle crashes; escalation of health care costs; low worker productivity; and homelessness. Alcohol and illicit drug use also can result in substantial disruptions in family, work, and personal life.

Alcohol abuse alone is associated with motor vehicle crashes, homicides, suicides, and drowning—leading causes of death among youth. Long-term heavy drinking can lead to heart disease, cancer, alcohol-related liver disease, and pancreatitis. Alcohol use during pregnancy is known to cause fetal alcohol syndrome, a leading cause of preventable mental retardation.

Trends of Substance Abuse

Adolescents. Although the trend from 1994 to 1997 has shown some fluctuations, about 77 percent of adolescents aged 12 to 17 years report being both alcohol-free and drug-free in the past month.

Alcohol is the drug most frequently used by adolescents aged 12 to 17 years. In 1997, 21 percent of adolescents aged 12 to 17 years reported drinking alcohol in the past month. Alcohol use in the past month for this age group has remained at about 20 percent since 1992. Eight percent of this age group reported binge drinking, and 3 percent were heavy drinkers (five or more drinks on the same occasion on each of five or more days in the past 30 days).

Data from 1998 show that 10 percent of adolescents aged 12 to 17 reported using illicit drugs in the past 30 days. This rate is significantly lower than in the previous year and remains well below the all-time high of 16 percent in 1979. Current illicit drug use had nearly doubled for those aged 12 to 13 years between 1996 and 1997 but then decreased between 1997 and 1998. Youth are experimenting with a variety of illicit drugs, including marijuana, cocaine, crack, heroin, acid, inhalants, and methamphetamines, as well as misuse of prescription drugs and other "street" drugs. The younger a person becomes a habitual user of illicit drugs, the stronger the addiction becomes and the more difficult it is to stop use.

Adults. Binge drinking has remained at the same approximate level of 16 percent for all adults since 1988, with the highest current rate of 32 percent among adults aged 18 to 25 years. Illicit drug use has been near the present rate of 6 percent since 1980. Men continue to have higher rates of illicit drug use than women, and rates of illicit drug use in urban areas are higher than in rural areas.

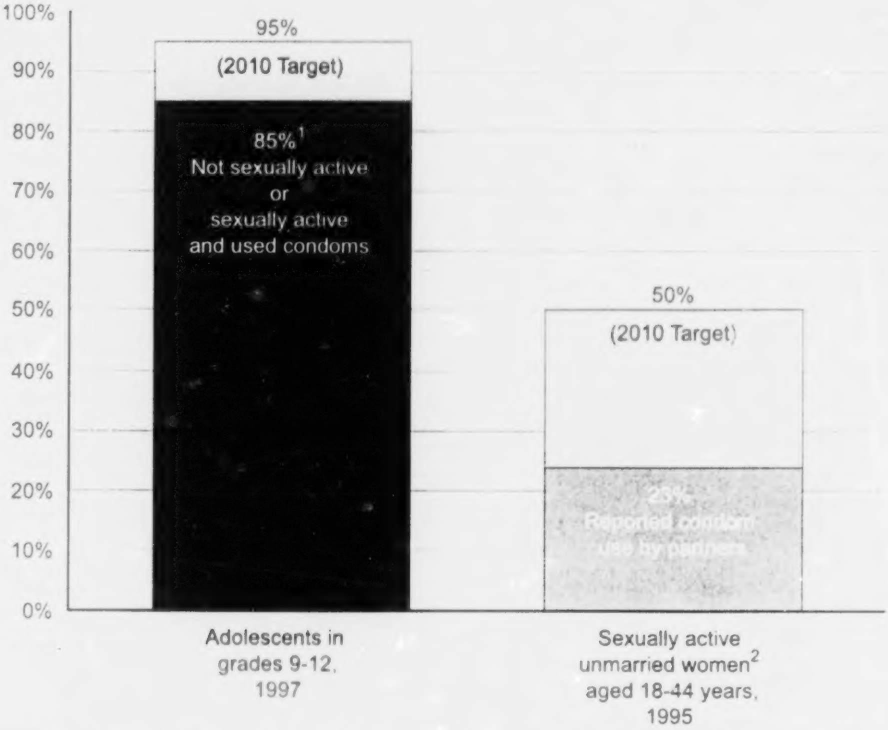
For more information on Healthy People 2010 objectives or on substance abuse, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

Responsible Sexual Behavior

Unintended pregnancies and sexually transmitted diseases (STDs), including infection with the human immunodeficiency virus that causes AIDS, can result from unprotected sexual behaviors. Abstinence is the only method of complete protection. Condoms, if used correctly and consistently, can help prevent both unintended pregnancy and STDs.

In 1997, 85 percent of adolescents abstained from sexual intercourse or used condoms if they were sexually active. In the same year, 23 percent of sexually active adults used condoms.

Responsible sexual behavior, United States, 1995 and 1997



[1] This 85 percent includes 52 percent of students in grades 9-12 who were not ever sexually active, 13 percent who were not sexually active in the past 3 months, and 20 percent who were sexually active but used a condom at the last intercourse.

[2] Data on males aged 15-49 years will be collected in 2003.

Source: Centers for Disease Control and Prevention. Youth Risk Behavior Survey, 1997. Centers for Disease Control and Prevention, National Center for Health Statistics. National Survey of Family Growth, 1995.

The objectives selected to measure progress among adolescents and adults for this Leading Health Indicator are presented below. These are only indicators and do not represent all the responsible sexual behavior objectives in Healthy People 2010.

25-11. Increase the proportion of adolescents who abstain from sexual intercourse or use condoms if currently sexually active.

13-6. Increase the proportion of sexually active persons who use condoms.

Trends in Sexual Behavior

In the past 6 years there has been both an increase in abstinence among all youth and an increase in condom use among those young people who are sexually active. Research has clearly shown that the most effective school-based programs are comprehensive ones that include a focus on abstinence *and* condom use. Condom use in sexually active adults has remained steady at about 25 percent.

Unintended Pregnancies

Half of all pregnancies in the United States are unintended, that is, at the time of conception the pregnancy was not planned or not wanted. Unintended pregnancy rates in the United States have been declining. The rates remain highest among women aged 20 years or younger, women aged 40 years or older, and low income African American women. Approximately 1 million teenage girls each year in the United States have unintended pregnancies. Nearly half of all unintended pregnancies end in abortion.

The cost to U.S. taxpayers for adolescent pregnancy is estimated at between $7 billion and $15 billion a year.

Sexually Transmitted Diseases

Sexually transmitted diseases are common in the United States, with an estimated 15 million new cases of STDs reported each year. Almost 4 million of the new cases of STDs each year occur in adolescents. Women generally suffer more serious STD complications than men, including pelvic inflammatory disease, ectopic pregnancy, infertility, chronic pelvic pain, and cervical cancer from the human papilloma virus. African Americans and Hispanics have higher rates of STDs than whites.

The total cost of the most common STDs and their complications is conservatively estimated at $17 billion annually.

HIV/AIDS

Nearly 700,000 cases of AIDS have been reported in the United States since the HIV/AIDS epidemic began in the 1980s. The latest estimates indicate that 650,000 to 900,000 people in the United States are currently infected with HIV. The lifetime cost of health care associated with HIV infection, in light of recent advances in HIV diagnostics and therapies, is $155,000 or more per person.

About one-half of all new HIV infections in the United States are among people aged 25 years and under, and the majority are infected through sexual behavior. HIV infection is the leading cause of death for African American men aged 25 to 44 years. Compelling worldwide evidence indicates that the presence of other STDs increases the likelihood of both transmitting and acquiring HIV infection.

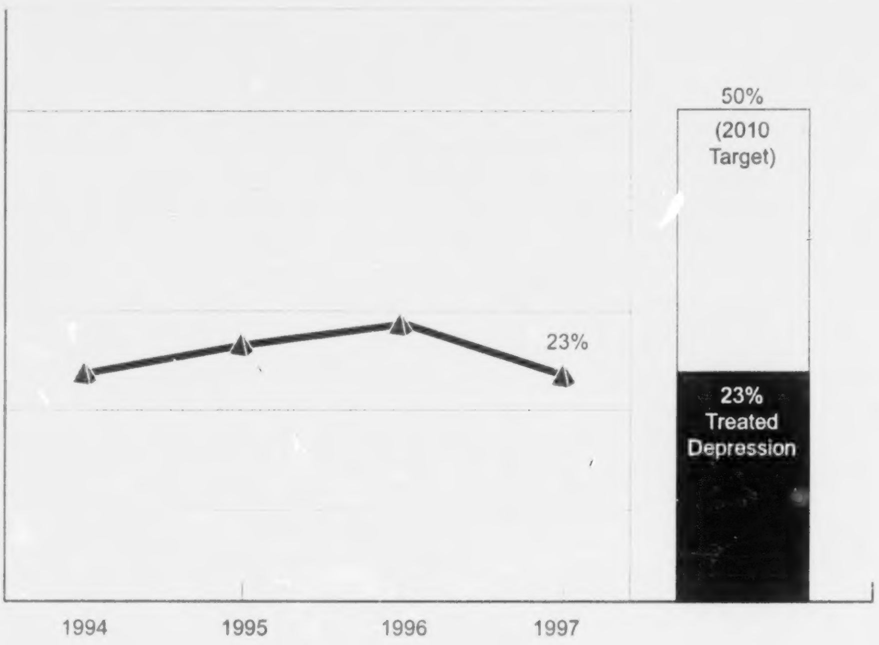
For more information on Healthy People 2010 objectives or on responsible sexual behavior, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

Mental Health

Approximately 20 percent of the U.S. population are affected by mental illness during a given year; no one is immune. Of all mental illnesses, depression is the most common disorder. More than 19 million adults in the United States suffer from depression. Major depression is the leading cause of disability and is the cause of more that two-thirds of suicides each year.

In 1997, only 23 percent of adults diagnosed with depression received treatment.

Adults with depression[1] who received treatment,[2] United States, 1994-1997



[1] Depression is defined as major depressive episode in the past year

[2] Treatment is defined as treatment in the past year for psychological problems or emotional difficulties at a mental health clinic or by a mental health professional on an outpatient basis or treatment for psychological or emotional difficulties at a hospital overnight or longer

Source Substance Abuse and Mental Health Services Administration, Office of Applied Studies. National Household Survey on Drug Abuse 1994-1997

The objective selected to measure progress among adults for this Leading Health Indicator is presented below. This is only an indicator and does not represent all the mental health objectives in Healthy People 2010.

18-9b. Increase the proportion of adults with recognized depression who receive treatment.

Definition of Mental Health

Mental health is sometimes thought of as simply the absence of a mental illness but is actually much broader. Mental health is a state of successful mental functioning, resulting in productive activities, fulfilling relationships, and the ability to adapt to change and cope with adversity. Mental health is indispensable to personal well-being, family and interpersonal relationships, and one's contribution to society.

Impact of Depression

A person with a depressive disorder is often unable to fulfill the daily responsibilities of being a spouse, partner, or parent. The misunderstanding of mental illness and the associated stigmatization prevent many persons with depression from seeking professional help. Many people will be incapacitated for weeks or months because their depression goes untreated.

Depression is also associated with other medical conditions, such as heart disease, cancer, and diabetes as well as anxiety and eating disorders. Depression has also been associated with alcohol and illicit drug abuse. An estimated 8 million persons aged 15 to 54 years had coexisting mental and substance abuse disorders within the past year.

The total estimated direct and indirect cost of mental illness in the United States in 1996 was $150 billion.

Treatment of Depression

Depression is treatable. Available medications and psychological treatments, alone or in combination, can help 80 percent of those with depression. With adequate treatment, future episodes of depression can be prevented or reduced in severity. Treatment for depression can enable people to return to satisfactory, functioning lives.

Populations With High Rates of Depression

Serious mental illness clearly affects mental health and can affect children, adolescents, adults, and older adults of all ethnic and racial groups, both genders, and people at all educational and income levels.

Adults and older adults have the highest rates of depression. Major depression affects approximately twice as many women as men. Women who are poor, on welfare, less educated, unemployed, and from minority populations are more likely to experience depression. In addition, depression rates are higher among older adults with coexisting medical conditions. For example, 12 percent of older persons hospitalized for problems such as hip fracture or heart disease are diagnosed with depression. Rates of depression for older persons in nursing homes range from 15 to 25 percent.

For more information on Healthy People 2010 objectives or on mental health, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

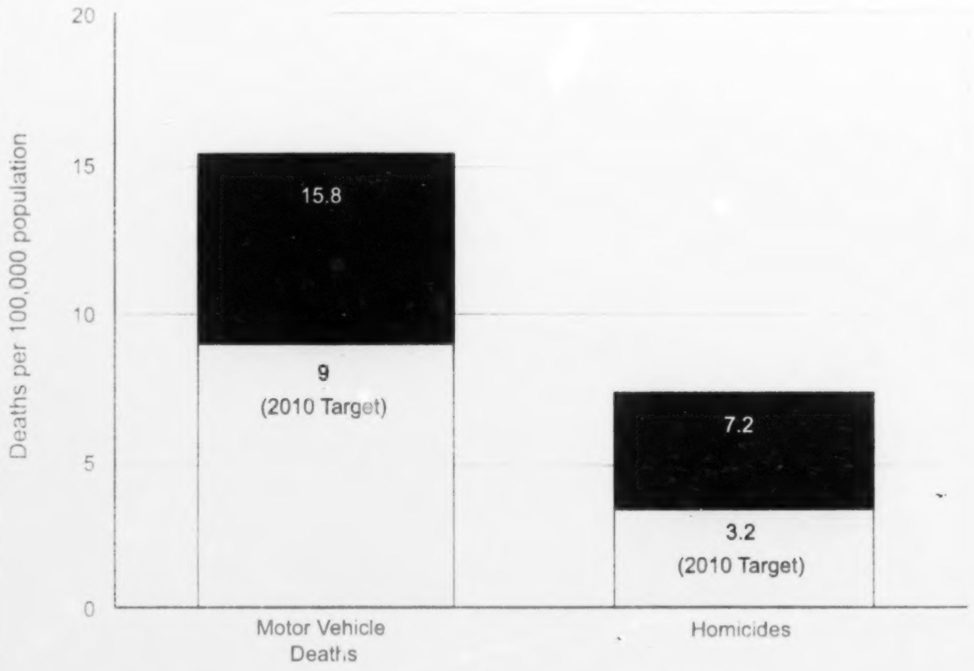
Injury and Violence

More than 400 Americans die each day from injuries due primarily to motor vehicle crashes, firearms, poisonings, suffocation, falls, fires, and drowning. The risk of injury is so great that most persons sustain a significant injury at some time during their lives.

Motor vehicle crashes are the most common cause of serious injury. In 1997 there were 15.8 deaths from motor vehicle crashes per 100,000 persons.

Because no other crime is measured as accurately and precisely, homicide is a reliable indicator of all violent crime. In 1997, the murder rate in the United States fell to its lowest level in 3 decades, 7.2 homicides per 100,000 persons.

Motor vehicle deaths and homicides, United States, 1997



Source Centers for Disease Control and Prevention, National Center for Health Statistics National Vital Statistics System 1997

The objectives selected to measure progress for this Leading Health Indicator are presented below. These are only indicators and do not represent all the injury and violence prevention objectives in Healthy People 2010.

15-15. Reduce deaths caused by motor vehicle crashes.
15-32. Reduce homicides.

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Impact of Injury and Violence

The cost of injury and violence in the United States is estimated at more than $224 billion per year, an increase of 42 percent over the last decade. These costs include direct medical care and rehabilitation as well as productivity losses to the Nation's workforce. The total societal cost of motor vehicle crashes alone exceeds $150 billion annually.

Motor Vehicle Crashes

Motor vehicle crashes are often predictable and preventable. Increased use of seat belts and reductions in driving while impaired are two of the most effective means to reduce the risk of death and serious injury of occupants in motor vehicle crashes.

Death rates associated with motor vehicle-traffic injuries are highest in the age group 15 to 24 years. In 1996, teenagers accounted for only 10 percent of the U.S. population but 15 percent of the deaths from motor vehicle crashes. Those aged 75 years and older had the second highest rate of motor vehicle-related deaths.

Nearly 40 percent of traffic fatalities in 1997 were alcohol-related. Each year in the United States it is estimated that more than 120 million episodes of impaired driving occur among adults. In 1996, 21 percent of traffic fatalities of children under age 14 years involved alcohol; 60 percent of the time it was the driver of the child's car who was impaired.

The highest intoxication rates in fatal crashes in 1995 were recorded for drivers aged 21 to 24 years. Young drivers who have been arrested for driving while impaired are more than four times as likely to die in future alcohol-related crashes.

Homicides

In 1997, 32,436 individuals died from firearm injuries; of this number, 42 percent were victims of homicide. In 1997, homicide was the third leading cause of death for children aged 5 to 14 years, an increasing trend in childhood violent deaths. In 1996, more than 80 percent of infant homicides were considered to be fatal child abuse.

Many factors that contribute to injuries are also closely associated with violent and abusive behavior, such as low income, discrimination, lack of education, and lack of employment opportunities.

Males are most often the victims and the perpetrators of homicides. African Americans are seven times more likely than whites to be murdered. There has been a decline in the homicide of intimates, including spouses, partners, boyfriends, and girlfriends, over the past decade, but this problem remains significant.

For more information on Healthy People 2010 objectives or on injury and violence, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

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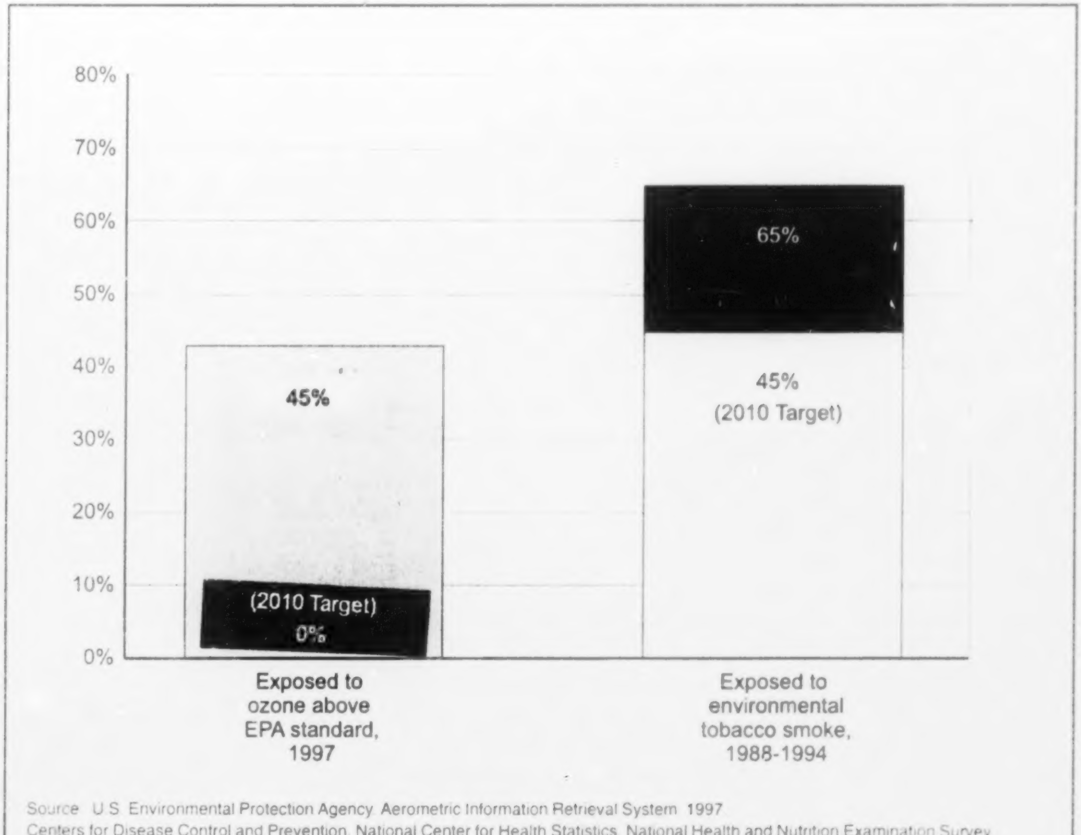
Environmental Quality

An estimated 25 percent of preventable illnesses worldwide can be attributed to poor environmental quality. In the United States, air pollution alone is estimated to be associated with 50,000 premature deaths and an estimated $40 billion to $50 billion in health-related costs annually. Two indicators of air quality are ozone (outdoor) and environmental tobacco smoke (indoor).

In 1997, approximately 43 percent of the U.S. population lived in areas designated as nonattainment areas for established health-based standards for ozone. During the years 1988 to 1994, 65 percent of nonsmokers were exposed to environmental tobacco smoke (ETS).

Ozone and environmental tobacco smoke exposure, United States, 1988-1994, 1997



Source: U.S. Environmental Protection Agency. Aerometric Information Retrieval System. 1997.
Centers for Disease Control and Prevention, National Center for Health Statistics. National Health and Nutrition Examination Survey 1988-94

The objectives selected to measure progress among children, adolescents, and adults for this Leading Health Indicator are presented below. These are only indicators and do not represent all the environmental quality objectives in Healthy People 2010.

8-1a. Reduce the proportion of persons exposed to air that does not meet the U.S. Environmental Protection Agency's health-based standards for ozone.

27-10. Reduce the proportion of nonsmokers exposed to environmental tobacco smoke.

Defining the Environment

Physical and social environments play major roles in the health of individuals and communities. The physical environment includes the air, water, and soil, through which exposure to chemical, biological, and physical agents may occur. The social environment includes housing, transportation, urban development, land-use, industry, and agriculture and results in exposures such as work-related stress, injury, and violence.

Global Concern

Environmental quality is a global concern. Ever-increasing numbers of people and products cross national borders and may transfer health risks such as infectious diseases and chemical hazards. For example, pesticides that are not registered or are restricted for use in the United States potentially could be imported in the fruits, vegetables, and seafood produced abroad.

Health Impact of Poor Air Quality

Poor air quality contributes to respiratory illness, cardiovascular disease, and cancer. For example, asthma can be triggered or worsened by exposure to ozone and ETS. The overall death rate from asthma increased 52 percent between 1980 and 1993, and for children it increased 67 percent.

Air Pollution. Dramatic improvements in air quality in the United States have occurred over the past three decades. Between 1970 and 1997, total emissions of the six principal air pollutants decreased 31 percent. Still, million of tons of toxic pollutants are released into the air each year from automobiles, industry, and other sources. In 1997, despite continued improvements in air quality, approximately 120 million people lived in areas with unhealthy air based on established standards for one or more commonly found air pollutants, including ozone. In 1996, a disproportionate number of Hispanics and Asian and Pacific Islanders lived in areas that failed to meet these standards compared with whites, African Americans, and American Indians or Alaska Natives.

Tobacco Smoke. Exposure to ETS, or secondhand smoke, among nonsmokers is widespread. Home and workplace environments are major sources of exposure. A total of 15 million children are estimated to have been exposed to secondhand smoke in their homes in 1996. ETS increases the risk of heart disease and respiratory infections in children and is responsible for an estimated 3,000 cancer deaths of adult nonsmokers.

Improvement in Environmental Quality

In the United States, ensuring clean water, safe food, and effective waste management has contributed greatly to a declining threat from many infectious diseases; however, there is still more that can be done. Work to improve the air quality and to better understand threats such as chronic, low-level exposures to hazardous substances must also continue.

For more information on Healthy People 2010 objectives or on environmental quality, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

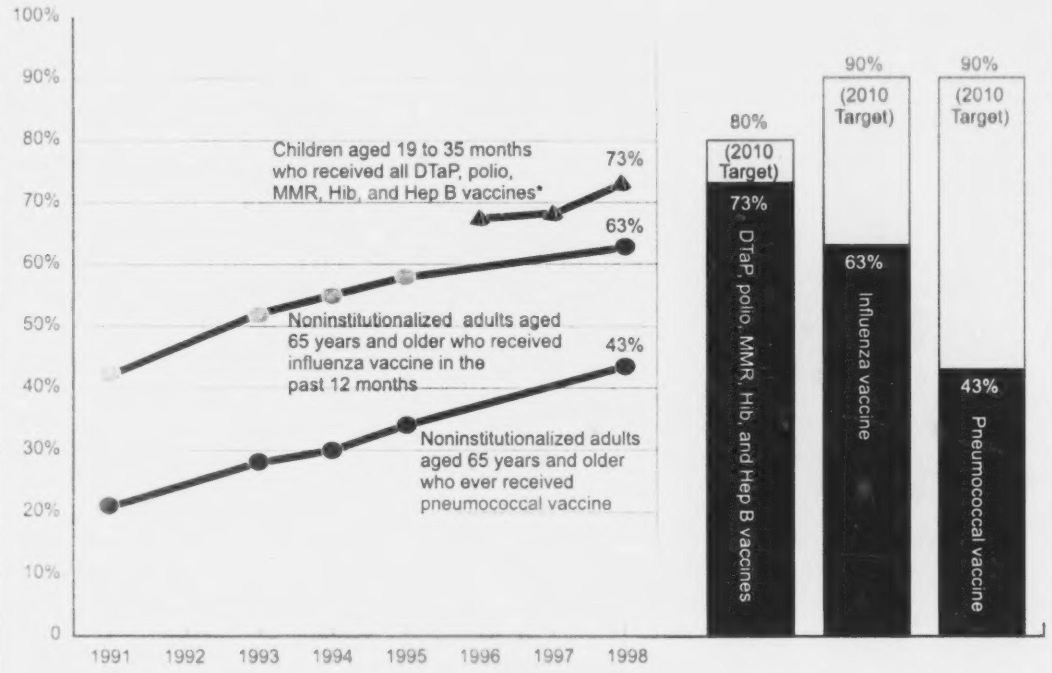
Immunization

Vaccines are among the greatest public health achievements of the 20th century. Immunizations can prevent disability and death from infectious diseases for individuals and can help control the spread of infections within communities.

In 1998, 73 percent of children received all vaccines recommended for universal administration for at least 5 years.

In 1997, influenza immunization rates were 63 percent in adults aged 65 and older, almost double the 1989 immunization rate of 33 percent. In 1997, only 43 percent of persons aged 65 and older had ever received a pneumococcal vaccine.

Immunization coverage, United States, 1991-1998



*Four or more doses of diphtheria/tetanus/acellular pertussis (DTaP) vaccine, three or more doses of polio vaccine, one or more dose measles/mumps/rubella (MMR) vaccine, three or more doses of *Haemophilus influenzae* type b (Hib) vacccine, and three or more doses or hepatitis B (Hep B) vaccine

Source Centers for Disease Control and Prevention, National Center for Health Statistics and National Immunization Program National Immunization Survey 1996-1998 Centers for Disease Control and Prevention, National Center for Health Statistics National Health Interview Survey 1991-1997

The objectives selected to measure progress among children and adults for this Leading Health Indicator are presented below. These are only indicators and do not represent all the immunization and infectious diseases objectives in Healthy People 2010.

14-24. **Increase the proportion of young children who receive all vaccines that have been recommended for universal administration for at least 5 years.**

14-29a,b. **Increase the proportion of noninstitutionalized adults who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease.**

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Impact of Immunization

Many once-common vaccine-preventable diseases are now controlled. Smallpox has been eradicated, poliomyelitis has been eliminated from the Western Hemisphere, and measles cases in the United States are at a record low.

Immunizations against influenza and pneumococcal disease can prevent serious illness and death. Pneumonia and influenza deaths together constitute the sixth leading cause of death in the United States. Influenza causes an average of 110,000 hospitalizations and 20,000 deaths annually; pneumococcal disease causes 10,000 to 14,000 deaths annually.

Recommended Immunizations

As of November 1, 1999, all children born in the United States (11,000 per day) should be receiving 12 to 16 doses of vaccine by age 2 years to be protected against 10 vaccine-preventable childhood diseases. This recommendation will change in the years ahead as new vaccines are developed, including combinations of current vaccines that may even reduce the number of necessary shots.

Recommended immunizations for adults aged 65 years and older include a yearly immunization against influenza (the "flu-shot") and a one-time immunization against pneumococcal disease. Most of the deaths and serious illnesses caused by influenza and pneumococcal disease occur in older adults and others at increased risk for complications of these diseases due to other risk factors or medical conditions.

Trends in Immunization

National coverage levels in children are now greater than 90 percent for each immunization recommended during the first 2 years of life, except for hepatitis B and varicella vaccines. The hepatitis B immunization rate in children was 87 percent in 1998, the highest level ever reported. In 1996, 69 percent of children aged 19 to 35 months from the lowest income households received the combined series of recommended immunizations compared with 80 percent of children from higher income households.

Both influenza and pneumococcal immunization rates are signigicatly lower for African American and Hispanic adults than for white adults.

Other Immunization Issues

Coverage levels for immunizations in adults are not as high as those achieved in children, yet the health effects may be just as great. Barriers to adult immunization include not knowing immunizations are needed, misconceptions about vaccines, and lack of recommendations from health care providers.

For more information on Healthy People 2010 objectives or on immunization and infectious diseases, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

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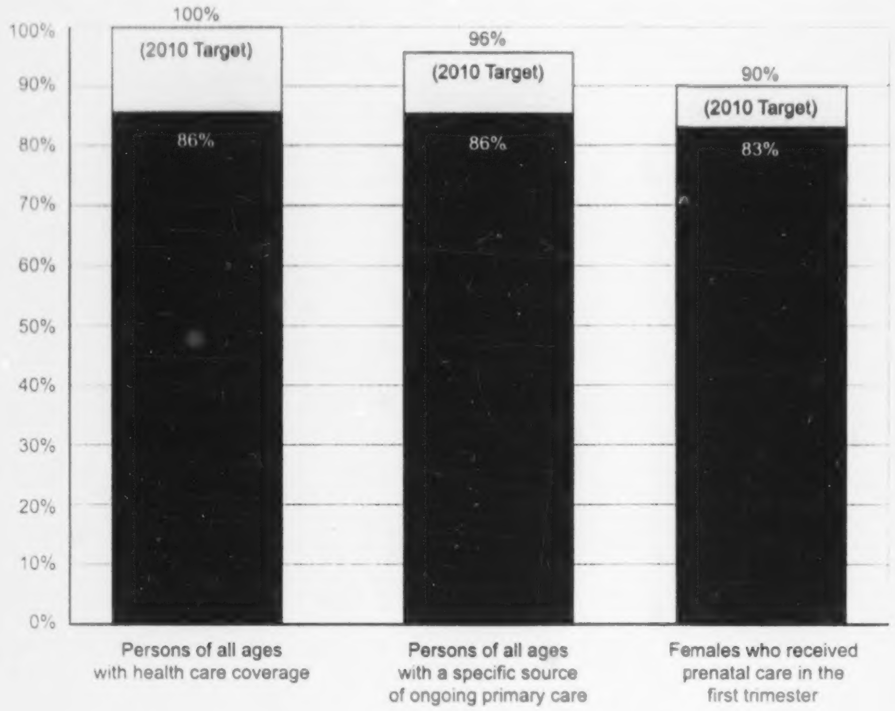
Access to Health Care

Strong predictors of access to quality health care include having health insurance, a higher income level, and a regular primary care provider or other source of ongoing health care. Use of clinical preventive services, such as early prenatal care, can serve as indicators of access to quality health care services.

In 1997, 86 percent of all individuals had health insurance, and 86 percent had a usual source of health care. Also in that year, 83 percent of pregnant women received prenatal care in the first trimester of pregnancy.

Access to health care, United States, 1997



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey. 1997. Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System. 1997.

The objectives selected to measure progress for this Leading Health Indicator are presented below. These are only indicators and do not represent all the access to quality health care objectives in Healthy People 2010.

1-1. **Increase the proportion of persons with health insurance.**

1-4a. **Increase the proportion of persons who have a specific source of ongoing care.**

16-6a. **Increase the proportion of pregnant women who begin prenatal care in the first trimester of pregnancy.**

Health Insurance

Health insurance provides access to health care. Persons with health insurance are more likely to have a primary care provider and to have received appropriate preventive care such as a recent Pap test, immunization, or early prenatal care. Adults with health insurance are twice as likely to receive a routine checkup as are adults without health insurance.

More than 44 million persons in the United States do not have health insurance, including 11 million uninsured children. Over the past decade, the proportion of persons aged 65 years and under with health insurance remained steady at about 85 percent. About one-third of adults 65 years and under below the poverty level were uninsured. For persons of Hispanic origin, approximately one in three was without health insurance coverage in 1997. Mexican Americans had one of the highest uninsured rates at 38 percent.

Ongoing Sources of Primary Care

More than 40 million Americans do not have a particular doctor's office, clinic, health center, or other place where they usually go to seek health care or health-related advice. Even among privately insured persons, a significant number lacked a usual source of care or reported difficulty in accessing needed care due to financial constraints or insurance problems.

People aged 18 to 24 years were the most likely to lack a usual source of ongoing primary care. Only 76 percent of individuals below the poverty level and 74 percent of Hispanics had a usual source of ongoing primary care.

Barriers to Access

Financial, structural, and personal barriers can limit access to health care. Financial barriers include not having health insurance, not having enough health insurance to cover needed services, or not having the financial capacity to cover services outside a health plan or insurance program. Structural barriers include the lack of primary care providers, medical specialists, or other health care professionals to meet special needs or the lack of health care facilities. Personal barriers include cultural or spiritual differences, language barriers, not knowing what to do or when to seek care, or concerns about confidentiality or discrimination.

For more information on Healthy People 2010 objectives or on access to health care, visit www.health.gov/healthypeople/ or call 1-800-336-4797.

Bibliography

Introduction

McGinnis JM and Maiese DR. Defining mission, goals, and objectives. In: *Principles of Public Health Practice*. Scutchfield FD and Keck CW (eds.). Albany, NY: Delmar Publishers, 1997, pp. 140-141.

A Systematic Approach to Health Improvement

Goals

American College of Physicians. Rural primary care. *Ann Inter Med* 122(5):380-390, 1995.

American Medical Association Council Report. Health care needs of gay men and lesbians in the United States. *JAMA* 247:1354-1359, 1996.

Centers for Disease Control and Prevention. BRFSS Prevalence Data, 1998. <http://ww2.cdc.gov/ nccdphp/brfss/index.asp>.

Centers for Disease Control and Prevention. Health-related quality of life and activity limitation—eight states, 1995. *MMWR* 47(7):134-140, 1998.

Centers for Disease Control and Prevention. Health-related quality-of-life measures—United States, 1993. *MMWR* 44:195-200, 1995.

Definitions: Healthy People 2010, Disability and Secondary Conditions Focus Area.

Institute of Medicine. *Improving Health in the Community*. Washington, DC: National Academy Press, 1997, pp. 48-56.

National Center for Health Statistics. *Health, United States, 1999, With Health and Aging Chartbook*. Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

National Center for Health Statistics. *Healthy People 2000 Review, 1998-99*. Hyattsville, MD: Public Health Service, 1999.

Tissue T. Another look at self-rated health among the elderly. *J Gerontol* (27):91-94, 1972.

Barker WH. Prevention of disability in older persons. In: *Public Health and Preventive Medicine, Fourteenth Edition*. Wallace RB (ed.). Stamford, CT: Appleton & Lange, 1998, p. 1063.

Braden J, Beauregard K. *Health Status and Access to Care of Rural and Urban Populations*. AHCPR Pub. no. 94-0031. National Medical Expenditure Survey Research Findings 18. Rockville, MD: Public Health Service, Agency for Health Care Policy and Research, 1994.

Catalan J, Pugh K. Suicidal behaviour and HIV infection—is there a link? *AIDS Care* 7(Suppl 2):S117-S121, 1995.

Cochran SD, Mays VM. Depressive distress among homosexually active African American men and women. *Am J Psychiatry* 151:524-529, 1994.

Davidson L, Linnoila M (eds.). *Report of the Secretary's Task Force on Youth Suicide, 2: Risk Factors for Youth Suicide*. Washington, DC: U.S. Department of Health and Human Services, Public Health Service, 1989.

Frumkin H and Walker ED. Minority workers and communities. In: *Public Health and Preventive Medicine, Fourteenth Edition*, Wallace RB (ed.). Stamford, CT: Appleton & Lange, 1998, p. 685.

Hoyert DL, Kochanek KD, Murphy SL. Deaths: final data for 1997. *National Vital Statistics Reports*. Vol. 47, no. 19. Hyattsville, MD: National Center for Health Statistics, 1999.

Idler EL and Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav* 38:21-37, 1997.

LaPlante MP, Rice DP, Cyril J. Health insurance coverage of people with disabilities in the U.S. *Disability Statistics Abstract*. Disability Statistics Rehabilitation. San Francisco, CA: Research and Training Center, September 1994.

Last JM. The determinants of health. In: *Principles of Public Health Practice*, Scutchfield FD and Keck CW (eds.). Albany, NY: Delmar Publishers, 1997, pp. 33-34.

Luepker RV. Heart disease. In: *Public Health and Preventive Medicine. Fourteenth Edition*, Wallace RB (ed.). Stamford, CT: Appleton & Lange, 1998, pp. 939-940.

McNeil JM. Americans with disabilities: 1994-95. *Current Population Reports*. Bureau of the Census (P70-61). Washington, DC: U.S. Department of Commerce, August 1997.

Pamuk E, Makuc D, Heck K, Reuben C, Lochner K. *Socioeconomic Status and Health Chartbook. Health, United States, 1998.* Hyattsville, MD: National Center for Health Statistics, 1998.

Pearson TA, Lewis C. Rural epidemiology: insights from a rural population laboratory. *Am J Epidemiol* 148(10):949-957, 1998.

Solarz, A (ed.). *Lesbian Health: current Assessment and Directions for the Future*. Washington, DC: Institute of Medicine, 1997.

Syme SL and Balfour JL. Social determinants of disease. In: *Public Health and Preventive Medicine, Fourteenth Edition*, Wallace RB (ed.). Stamford, CT: Appleton & Lange, 1998, pp. 800-801.

Vistnes JP and Monheit AC. *Health Insurance Status of the Civilian Noninstitutionalized Population*. Medical Expenditure Panel Survey Research Findings 1. AHCPR Pub. no. 97-0030. Rockville, MD: Agency for Health Care Policy and Research, August 1997.

Determinants of Health

Institute of Medicine. *Improving Health in the Community*. Washington, DC: National Academy Press, 1997, pp. 48-56.

McGinnis JM, Maiese DR. Defining mission, goals, and objectives. In: *Principles of Public Health Practice*, Scutchfield FD and Keck CW (eds.). Albany, NY: Delmar Publishers, 1997, pp. 136-145.

Syme SL and Balfour JL. Social determinants of disease. In: *Public Health and Preventive Medicine, Fourteenth Edition*, Wallace RB (ed.). Stamford, CT: Appleton & Lange, 1998, p. 795.

Health Status

National Center for Health Statistics. *Health, United States, 1999, With Health and Aging Chartbook.* Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

Leading Health Indicators

Physical Activity

Centers for Disease Control and Prevention. Physical activity and the prevention of coronary heart disease. *MMWR* 42:669-672, 1993.

Centers for Disease Control and Prevention. Prevalence of sedentary leisure-time behavior among adults in the United States. *Health E-Stats*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Health Statistics, 1999.

National Center for Health Statistics. *Health, United States, 1999, With Health and Aging Chartbook.* Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

National Center for Health Statistics. *Healthy People 2000 Review, 1998-99*. Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General.* Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.

Pamuk E, Makuc D, Heck K, Reuben C, Lochner K. *Socioeconomic Status and Health Chartbook. Health, United States, 1998.* Hyattsville, MD: National Center for Health Statistics, 1998.

Overweight and Obesity

Agricultural Research Service. Research News. Press Release. U.S. Department of Agriculture, Washington, DC, November 20, 1996.

National Center for Health Statistics. *Health, United States, 1999, With Health and Aging Chartbook.* Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

National Center for Health Statistics. *Healthy People 2000 Review, 1998-99*. Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

National Institutes of Health. *Statistics Related to Overweight and Obesity*. NIH Publication No. 96-4158. National Institute of Diabetes and Digestive and Kidney Diseases. Bethesda, MD: U.S. Department of Health and Human Services, July 1996.

U.S. Department of Agriculture/U.S. Department of Health and Human Services. *Dietary Guidelines for Americans. Fourth Edition.* USDA Home and Garden Bulletin No. 232. December 1995.

Pamuk E, Makuc D, Heck K, Reuben C, Lochner K. *Socioeconomic Status and Health Chartbook. Health, United States, 1998.* Hyattsville, MD: National Center for Health Statistics, 1998.

Lin BH and Frazao E. Nutritional quality of foods at and away from home. *FoodReview* 20(2):33-40, 1997.

Wolf AM, Colditz GA. Current estimates of the economic cost of obesity in the United States. *Obesity Research* 6(2):97-106, 1998.

Tobacco Use

Centers for Disease Control and Prevention. Guidelines for school health programs to prevent tobacco use and addiction. *MMWR* 43(no. RR-2):1994.

Centers for Disease Control and Prevention. Smoking-attributable mortality and years of potential life lost—United States, 1984. *MMWR* 46(20):441-451, 1997.

Centers for Disease Control and Prevention. *Targeting Tobacco Use: The Nation's Leading Cause of Death.* Atlanta, GA: U.S. Department of Health and Human Services, CDC, 1999.

Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance—United States, 1997. *MMWR* 47(SS-3):1998.

National Center for Health Statistics. *Health, United States, 1999, With Health and Aging Chartbook.* Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

National Cancer Institute. *Cigars: Health Effects and Trends.* Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, 1998.

U.S. Environmental Protection Agency. *Respiratory Health Effects of Passive Smoking: Fact Sheet.* EPA Pub. No. EPA-43-F-93-003. Washington, DC: EPA, 1993.

U.S. Department of Health and Human Services. *Tobacco Use Among U.S. Racial/Ethnic Minority Groups—African Americans, American Indians and Alaska Natives, Asian Americans and Pacific Islanders, and Hispanics: A Report of the Surgeon General.* Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1998.

Substance Abuse

National Clearinghouse for Alcohol and Drug Information. *Health Care Costs, the Deficit, & Alcohol, Tobacco, and Other Drugs.* Rockville, MD: NCADI Inventory Number ML007, 1995.

Substance Abuse and Mental Health Services Administration. *Summary of Findings From the 1998 National Household Survey on Drug Abuse.* Rockville, MD: U.S. Department of Health and Human Services, SAMHSA, Office of Applied Studies, 1999.

Harwood H, Fountain D, Livermore G. *The Economic Costs of Alcohol and Drug Abuse in the United States, 1992*. NIH Publication Number 98-4327. Rockville, MD: U.S. Department of Health and Human Services, National Institutes of Health, 1998.

Responsible Sexual Behavior

American Social Health Association. *Sexually Transmitted Diseases in America: How Many Cases and at What Cost?* Menlo Park, CA: Kaiser Family Foundation, 1998.

Centers for Disease Control and Prevention. *Fact sheet: Youth Risk Behavior Trends*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. National Center for Chronic Disease Prevention and Health Promotion, 1999.

Centers for Disease Control and Prevention. *From Data to Action: CDC's Public Health Surveillance for Women, Infants, and Children*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1994.

Centers for Disease Control and Prevention. *HIV/AIDS Surveillance Report, Midyear edition*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 1999.

Centers for Disease Control and Prevention. *PRAMS 1996 Surveillance Report*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Reproductive Health, 1999.

Centers for Disease Control and Prevention. Trends in sexual risk behaviors among high school students—United States, 1991-1997. *MMWR* 47(36):749-752, 1998.

Centers for Disease Control and Prevention. Young people at risk—epidemic shifts further toward young women and minorities. In: *CDC Update*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for HIV, TB & STD Prevention, 1999.

Division of STD Prevention. *Sexually Transmitted Disease Surveillance, 1998*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, September 1999.

National Center for Health Statistics. *Healthy People 2000 Review, 1998-99*. Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

Holtgrave DR, Pinkerton SD. Updates of cost of illness and quality of life estimates for use in economic evaluations of HIV prevention programs. *J Acquir Immune Defic Syndr Hum Retrovirol* 16(1):54-62, 1997.

Hoyert DL, Kochanek KD, Murphy SL. Deaths: final data for 1997. *National Vital Statistics Reports*. Vol. 47, no. 19. Hyattsville, MD: National Center for Health Statistics, 1999.

Maynard RA (ed.). *Kids Having Kids; Economic Costs and Cocial Consequences of Teen Pregnancy*. Washington, DC: Urban Institute Press, 1997.

St. Louis ME, Wasserheit JN, Gayle HD. Janus considers the HIV pandemic-harnessing recent advances to enhance AIDS prevention. *Am J Public Health* 87(1):10-12, 1997.

Mental Health

National Center for Health Statistics. *Healthy People 2000 Review, 1998-99* Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

National Institutes of Health, Consensus Development Panel on Depression in Late Life, Diagnosis and treatment of depression in late life. *JAMA* 268:1018-1024, 1992.

National Institute of Mental Health. *Depression*. Fact sheet. http://www.nimh.nih.gov/depression/index.htm. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, 1999.

National Institute of Mental Health. *The Invisible Disease—Depression.* Fact sheet. <http://www.nimh.nih.gov/publicat/invisible.cfm>. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, 1999.

Office of Applied Statistics. *Statistics Source Book, 1998,* Rouse BA (ed.). Substance Abuse and Mental Health Services Administration. Rockville, MD: U.S. Department of Health and Human Services, 1998.

Substance Abuse and Mental Health Services Administration. *Mental Health: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, National Institutes of Health, 1999.

Bromet EJ. Psychiatric disorders. In: *Public Health and Preventive Medicine, Fourteenth Edition,* Wallace RB (ed.). Stamford, CT: Appleton & Lange, 1998, p. 1037.

Greenberg PE, Stiglin LE, Finkelstein SN, Berndt ER. The economic burden of depression in 1990. *J Clin Psychiatry* 54:405-418, 1993.

Koenig HG and Blazer DG. Mood disorders and suicide. In: *Handbook of Mental Health and Aging, Second Edition,* Birren JE, Sloane RB, Cohen GD (eds.). San Diego, CA: Academic Press, 1992, 379-407.

Weissman MM and Klerman JK. Depression: current understanding and changing trends. *Ann Rev Public Health* 13:319-339, 1992.

Injury and Violence

National Center for Health Statistics. *Healthy People 2000 Review, 1998-99*. Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

National Center for Injury Prevention and Control. *Impaired Driving Fact Sheet.* Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 1999.

National Highway Traffic Safety Administration. *Traffic Safety Facts, 1998.* Washington, DC: U.S. Department of Transportation, 1998.

National Safety Council, *Accident Facts.* Washington, DC: National Safety Council, 1995.

Baker SP, O'Neill B, Ginsburg MJ, Li G. *The Injury Fact Book, 2nd Edition,* New York, NY: Oxford University Press, 1992.

Fox JA and Zawitz MW. *Homicide Trends in the United States.* U.S. Department of Justice, Bureau of Justice Statistics, 1999.

Hoyert DL, Kochanek KD, Murphy SL. Deaths: final data for 1997. *National Vital Statistics Reports*. Vol. 47, no. 19. Hyattsville, MD: National Center for Health Statistics, 1999.

Environmental Quality

American Lung Association. *Health Costs of Air Pollution*. Washington, DC: American Lung Association, 1990.

California Environmental Protection Agency, *Health Effects of Exposure to Environmental Tobacco Smoke*. Final Report. Sacramento, CA: California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, 1997.

Centers for Disease Control and Prevention. Progress toward the elimination of tuberculosis—United States, 1998. *MMWR* 48:732-736, 1999.

Centers for Disease Control and Prevention. State-specific prevalence of cigarette smoking among adults, and children's and adolescent's exposure to environmental tobacco smoke—United States. *MMWR* 46:1038-1043, 1997.

National Center for Health Statistics. *Health, United States, 1999, With Health and Aging Chartbook*. Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

U.S. Environmental Protection Agency. *National Air Quality and Trends Report*. Office of Air and Radiation. Washington, DC: EPA, 1997.

U.S. Environmental Protection Agency. *Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders*. EPA Pub. No. EPA/600/6-90/006F. Washington, DC: EPA, 1992.

World Health Organization. Fact Sheet 170, June 1997.

Weiss KB, Gergen PJ, Hodgson TA. An economic evaluation of asthma in the United States. *N Engl J Med* 326:862-866, 1992.

Immunization

Centers for Disease Control and Prevention. National Immunization Program, Immunization Services Division, Health Services Research and Evaluation Branch. Unpublished data. Atlanta, GA, 1999.

Centers for Disease Control and Prevention. National vaccination coverage levels among children aged 19-35 months—United States, 1998. *MMWR* 48:829-830, 1999.

Centers for Disease Control and Prevention. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 48(no. RR-4), 1999.

Centers for Disease Control and Prevention. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 46(no. RR-8), 1997.

Centers for Disease Control and Prevention. Reasons reported by Medicare beneficiaries for not receiving influenza and pneumococcal vaccinations—United States, 1996. *MMWR* 48:886-890, 1999.

Centers for Disease Control and Prevention. Recommended childhood immunization schedule—United States, 1999. *MMWR* 48:12-16, 1999.

Centers for Disease Control and Prevention. Ten great public health achievements—United States, 1900-1999. *MMWR* 48:241-248, 1999.

National Center for Health Statistics. *Health, United States, 1999, With Health and Aging Chartbook.* Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

Feiken DR, Schuchat A, Kolczak M, et al. Mortality from invasive pneumococcal pneumonia in the era of antibiotic resistance, 1995-1997. *Am J Public Health,* in press.

Pamuk E, Makuc D, Heck K, Reuben C, Lochner K. *Socioeconomic Status and Health Chartbook. Health, United States, 1998.* Hyattsville, MD: National Center for Health Statistics, 1998.

Access to Health Care

Centers for Disease Control and Prevention. Health insurance coverage and receipt of preventive health services—United States, 1993. *MMWR* 44(11):219-225, 1995.

National Center for Health Statistics. *Health, United States, 1999, With Health and Aging Chartbook.* Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

U.S. General Accounting Office. *Health Insurance: Coverage Leads to Increased Health Care Access for Children.* GAO/HEHS-98-14. Washington, DC: GAO, 1998, pp. 4-20.

Healthy People 2010

Objectives for Improving Health (Part A)

Reader's Guide

Each focus area chapter contains the following sections:

Lead Agency Designation

Each focus area is managed by a designated lead agency or co-lead agencies of the U.S. Department of Health and Human Services (HHS). For certain focus areas, the lead agency responsibilities are shared by other Federal Departments. In particular, the Disability and Secondary Conditions focus area is co-led by the Centers for Disease Control and Prevention and the U.S. Department of Education. The Food Safety focus area is co-led by the Food and Drug Administration and the Food Safety and Inspection Service of the U.S. Department of Agriculture. Lead agencies are responsible for undertaking activities to move the Nation toward achieving the year 2010 goals and for reporting progress on the focus area objectives over the course of the decade.

Contents

This brief list details the specific organization of each chapter, including the descriptive headings for the types of objectives that are contained in this focus area.

Goal Statement

Each chapter contains a concise goal statement. This statement frames the overall purpose of the focus area.

Overview

The Overview provides the context and background for the objectives and identifies opportunities for prevention or interventions. The Overview addresses the following topics: nature of the issues; key trends or developments in the focus area; costs and other pertinent information; relevant disparities among population groups (including race and ethnicity, gender, age, disability status, and socioeconomic status) or between geographic areas; and implications of such factors for prevention or other improvements, with explicit reference to the objectives and promising research.

Interim Progress Toward Year 2000 Objectives

Because Healthy People 2010 builds on the experience of the preceding decade, this section provides a brief description of progress to date on year 2000 objectives pertaining to the focus area. A final report on the year 2000 objectives, *Healthy People 2000 Review*, will be published by the National Center for Health Statistics of the Centers for Disease Control and Prevention.

Healthy People 2010 Objectives

This section begins with a restatement of the focus area goal and a list of short titles for all objectives in the focus area. Where appropriate, objectives are organized into sections with headings. These headings provide structure and appear in the list of short titles.

Objectives were developed by work groups (see Appendix E and Appendix F) for each focus area, with broad public input. Each objective is designed to drive action. Therefore, objectives begin with a verb, followed by the subject.

Each objective is numbered for reference purposes. Numbering does not imply priority or importance. Explanatory text follows objectives as needed.

Criteria for Developing Objectives

Criteria first published in *Developing Objectives for Healthy People 2010* in September 1997 call for objectives to be useful to national, State, and local agencies as well as to the private sector and the public. The objectives must have certain attributes, including the following:

- The result to be achieved should be **important and understandable** to a broad audience and relate to the two overarching Healthy People 2010 goals.

- Objectives should be **prevention oriented** and should address health improvements that can be achieved through population-based and health-service interventions.

- Objectives should **drive action** and suggest a set of interim steps that will achieve the proposed targets within the specified timeframe.

- Objectives should be **useful and relevant**. States, localities, and the private sector should be able to use the objectives to target efforts in schools, communities, worksites, health practices, and other settings.

- Objectives should be **measurable** and include a range of measures—health outcomes, behavioral and health-service interventions, and community capacity—directed toward improving health outcomes and quality of life. They should count assets and achievements and look to the positive.

- **Continuity** and **comparability** are important. Whenever possible, objectives should build upon Healthy People 2000 and those goals and performance measures already established.

- Objectives must be supported by sound **scientific evidence.**

Types of Objectives

There are two types of objectives—measurable and developmental.

Measurable objectives. Measurable objectives provide direction for action. For measurable objectives, the current status is expressed with a national baseline. The baseline represents the starting point for action to move the Nation toward the desired end. The baselines use valid and reliable data derived from currently established, nationally representative data systems. These baseline data provide the point from which a 2010 target is set. Where possible, objectives are measured with nationally representative data systems. Some of these systems build on, or are comparable with, State and local data systems. However, State data are not a prerequisite to developing an objective. Non-national data may be used where national data are not available. These situations are noted in the baseline data for the objective. The data source for each measurable objective is identified.

Developmental objectives. Developmental objectives provide a vision for a desired outcome or health status. Current national surveillance systems do not provide data on these subjects. The purpose of developmental objectives is to identify areas of emerging importance and to drive the development of data systems to measure them. Most developmental objectives have a potential data source with reasonable expectation of data points by the year 2004 to facilitate setting year 2010 targets in the mid-decade review. Developmental objectives that do not have a baseline at the midcourse will be dropped.

Population Group Data Table

Because eliminating health disparities is a goal of Healthy People 2010, a standard data table is used to display the current status of population groups for population-based objectives. This standard table consists of a set of population variables that are to be considered a minimum breakout set for data collection. Within each category in the table, groups are alphabetized. Some objectives show more detailed or additional breakouts of population groups.

Sample Population-Based Table

	Percent of Persons With Health Insurance
TOTAL	
Race and ethnicity	
American Indian or Alaska Native	
Asian or Pacific Islander	
Asian	
Native Hawaiian and other Pacific Islander	

Black or African American	
White	
Hispanic or Latino	
Not Hispanic or Latino	
Black or African American	
White	
Gender	
Female	
Male	
Family income level	
Poor	
Near poor	
Middle/high income	
Education level	
Less than high school	
High school graduate	
At least some college	
The following are additional categories included where appropriate.	
Geographic location	
Urban	
Rural	
Health insurance status	
Private health insurance	
Public health insurance	
Medicare	
Medicaid	
No health insurance	
Disability status	
Persons with disabilities or activity limitations	
Persons without disabilities or activity limitations	
Select populations	
Age groups	
School grade levels	
Persons with select medical conditions	

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Race and ethnicity. Following guidance issued by the Office of Management and Budget (OMB), Healthy People 2010 sets forth the new categories for reporting race and ethnicity. Federal data systems have until January 2003 to comply with these standards. "More than one race" will be displayed in this category when data are available at the midcourse review.

Gender. Gender follows race and ethnicity in the template. In many instances, where the unique problem for each gender needs to be highlighted, data for all population groups in the template are presented for both genders.

Socioeconomic status (SES). SES is shown as income level or education breakouts or both. If education was selected, data are presented in three groups: less than high school, high school graduate, and at least some college. If income was selected, the three groups are poor, near poor, and middle/high income. In some objectives, programmatic data considerations may result in different income categories being displayed.

Age. Age is not included in the minimum template for the table, because to show inclusive age categories would add considerable complexity to the minimum set. Furthermore, age often is in the objective (for example, mammograms for women aged 40 years and over), and many objectives are relevant only for a subset of age groups. Age breakouts have been added to objectives where relevant and may not be inclusive of the total population. For example, data lines for elderly persons or children could be added to selected objectives without adding other groups. Age adjustment here is indicated for those objectives. The statistical compendium, Tracking Healthy People 2010, covers this subject in greater detail.

Several other population groups are shown in various objectives. These include the following: urban/rural populations, health insurance status, and persons with disabilities or activity limitations.

The following abbreviations in the data tables indicate where data are not available:

DNA = Data have not been analyzed.

DNC = Data are not collected.

DSU = Data are statistically unreliable. The data set produces the figure, but the number of respondents is too small to be valid, the proportion of respondents with missing information is too large, or the survey does not have representative data for certain population groups.

NA = Not applicable.

Targets for Measurable Objectives

As a general rule, one target is set for all population groups to reach by the year 2010. This supports the overarching goal of eliminating health disparities. The guidelines used to develop targets are as follows:

- One national target for the year 2010 is set for all measurable objectives and is applicable to all population groups. This target setting method supports the goal of eliminating health disparities and improving health for all segments of the total population.
- For those measures contained in the HHS Initiative to Eliminate Racial and Ethnic Disparities in Health, the targets are set at "better than the best."
- For those objectives that in the short term can be influenced by lifestyle choices, behaviors, and health services (in other words, using existing and known interventions), the target also is set at "better than the best" currently achieved by any population group.
- For objectives for which it is unlikely to achieve an equal health outcome within 10 years by applying known health interventions, the target is set at levels that represent improvements for a substantial proportion of the population. These targets are regarded as minimally acceptable improvements. Explicit recognition is made that population groups already better than the identified target should continue to improve.

The following target setting methods have been used:

(1) Better than the best group.

(2) __ percent improvement.

(3) "Total coverage" or "Complete elimination" (for targets like 0 percent, 100 percent, all States, etc.).

(4) Consistent with __________________(another national program, for example, national education goals).

(5) Retain year 2000 target (the Healthy People 2000 target has been retained).

Data Source/Potential Data Source

Data source is defined as the instrument that reports the measure indicated. Measurable objectives cite the data source for the baseline.

(1) For HHS data sets, surveys, and reports, the citation includes the name of the data set, the HHS agency, and institute or center that serves as the source—for example, National Health Interview Survey, CDC, NCHS.

(2) For non-HHS or non-Federal data sets, surveys, and reports, the citation includes the name of the data set, cabinet-level agency, and bureau/agency/organization—for example, Fatality Analysis Reporting System, DOT, NHTSA.

Related Objectives

Each objective is placed in only one focus area, meaning there are no duplicate objectives in Healthy People 2010. There are, however, numerous linkages among focus areas, and these are represented in the list of related objectives from other focus areas.

Terminology

Terms are set up as dictionary definitions in alphabetical order. These definitions enable the reader to understand the concepts used in the chapter. A master list of abbreviations and acronyms used throughout the book appears in Appendix K. For more information on measuring the objectives, technical notes, or operational definitions, refer to the statistical compendium, Tracking Healthy People 2010.

References

The references cited throughout both the text and the objectives are listed at the end of each chapter.

1

Access to Quality Health Services

Co-Lead Agencies: Agency for Healthcare Research and Quality;
Health Resources and Services Administration

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Goal

Improve access to comprehensive, high-quality health care services.

Overview

Access to quality care is important to eliminate health disparities and increase the quality and years of healthy life for all Americans. This chapter focuses on four components of the health care system: clinical preventive care, primary care, emergency services, and long-term and rehabilitative care. Together with health care delivered by specialists and care received in hospital settings, these elements represent major components of the continuum of care. The public health system is important in each of these areas because it educates people about prevention and addresses the need to eliminate disparities by easing access to preventive services for people less able to use existing health services. It ensures the availability of primary care through direct funding of clinics and providers or by providing public insurance. It coordinates emergency services systems and oversees long-term and rehabilitative care. Tertiary services (for example, hospital and specialty care) currently are not included among the Healthy People 2010 objectives. The Agency for Healthcare Research and Quality (AHRQ), formerly the Agency for Health Care Policy and Research, is working in conjunction with the Centers for Disease Control and Prevention and other agencies of the U.S. Department of Health and Human Services to develop a *National Report on Healthcare Quality*, which will report annually on a broader array of quality measures that will complement Healthy People 2010.

Issues

Access to quality care across each of the components in the continuum of care must be improved to realize the full potential of prevention. For example, success in reducing the burden of heart disease and narrowing the gap in heart disease outcomes between different racial groups will depend on several factors. These factors include ensuring access to clinical preventive services, such as blood pressure and cholesterol screening; effective primary care to educate people about modifiable risk factors, such as smoking, and to manage effectively chronic conditions like hypertension; high-quality emergency services to improve outcomes of acute cardiac events; and access to rehabilitative and long-term care for heart disease patients.

Major changes in the structure of the U.S. health care system, including the increasing influence of market forces, changes in payment and delivery systems, and welfare reform, have significant implication for vulnerable and at-risk populations. In light of these systems changes, Federal, State, and local public health agencies must redouble their efforts to address access barriers and reduce disparities for these populations. It is increasingly important that health care communication and services be provided in a culturally and linguistically sensitive manner. Adequate access to health care and related services can increase appropriate patient use of the health care system and, ultimately, improve health outcomes. Consequently, measures of access across a continuum of care are an important way to evaluate the quality of the Nation's health care system.

Clinical preventive care. Clinical preventive services have a substantial impact on many of the leading causes of disease and death. People must have access to clinical preventive services that are effective in preventing disease (primary prevention) or in detecting asymptomatic disease or risk factors at early, treatable stages (secondary prevention). As in Healthy People 2000, the recommendations of the U.S. Preventive Services Task Force[1] serve as a guide to quality preventive health care. The task force was reconvened in 1998 and, in conjunction with the Evidence-Based Practice Centers (EPCs) of the Agency for Healthcare Research and Quality, will provide additional information regarding the effectiveness and cost-effectiveness of individual clinical preventive services.

Improving access to appropriate preventive care requires addressing many barriers, including those that involve the patient, provider, and system of care.[2,3] Patient barriers include lack of knowledge, skepticism about the effectiveness of prevention, lack of a usual source of primary care, and lack of money to pay for preventive care. Although patient awareness and acceptance of some interventions are high, such as screening for breast cancer, other interventions (for example, colorectal cancer screening and sexually transmitted disease [STD] screening) are less uniformly accepted. A small but significant number of patients remain skeptical of even widely accepted preventive measures, such as immunizations. Having health insurance, a high income, and a primary care provider are strong predictors that a person will receive appropriate preventive care. Although reimbursement for common screening tests, such as mammograms and Pap smears, is provided by most health insurance plans (and is required by law in some States), reimbursement for effective counseling interventions, such as smoking cessation, is less common.[4]

Health provider barriers include limited time, lack of training in prevention, lack of perceived effectiveness of selected preventive services, and practice environments that fail to facilitate prevention. Although consensus is growing regarding the value of a range of preventive services, providers identify lack of time and reimbursement as specific barriers to more consistent delivery of counseling about behavioral risk factors such as diet and exercise.[5] Computerized or manual tracking systems, patient and clinician reminders, guidelines, and patient information materials can help providers improve delivery of necessary preventive care.[6]

System barriers can include lack of resources or attention devoted to prevention, lack of coverage or inadequate reimbursement for services, and lack of systems to track the quality of care.[3] Systems interventions that can increase delivery of health care include offering clinical preventive services among standard covered benefits, providing feedback on performance to providers and practices, offering incentives for improved performance, and developing and implementing systems to identify and provide outreach to patients in need of services.[2]

Measuring and reporting how well preventive care is provided under different systems are essential first steps in motivating those systems that are not performing well to develop the information, tools, and incentives to improve care.[7] Significant progress in the delivery of clinical preventive services (CPS) is unlikely without appropriate data systems to allow providers and administrators to identify those services and populations most in need of better delivery. To be effective, preventive care also must be linked to systems to ensure appropriate followup services or counseling for patients identified by risk assessment or screening. Comprehensive national data to track what systems of care are doing to monitor and improve the delivery of CPS will not be available in the first half of the decade. Thus, this issue is not addressed in this focus area's objectives but represents an important research and data collection agenda for the coming decade.

Primary care. Improving primary care across the Nation depends in part on ensuring that people have a usual source of care. Having a primary care provider as the usual source of care is especially important because of the beneficial attributes of primary care. These benefits include the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community.[8] Increasing the number and proportion of members of underrepresented racial and ethnic groups who are primary care providers also is important because they are more likely to practice in areas where health services are in short supply and are more likely to practice in areas with high percentages of underrepresented racial and ethnic populations.

Emergency services. Prehospital emergency medical services (EMS), poison control centers (PCCs), and hospital-based emergency departments (EDs) are the most commonly sought sources of emergency care. Each year, they provide prompt first-contact care for millions of Americans regardless of their socioeconomic status, age, or special need. For many severely ill and injured persons, they are a crucial link in the chain of survival between the onset of symptoms and treatment in a hospital. For persons whose health problems are less pressing but who believe they need urgent medical attention, emergency services are a gateway to additional health care.

In addition to their central role in secondary and tertiary prevention, emergency services are increasingly contributing to primary prevention by providing immunizations and other preventive care in association with treatment for acute health problems.

Within the current health care delivery system, EDs are the only institutional providers required by Federal law to evaluate anyone seeking care.[9] They are expected at least to stabilize the most severely ill and injured patients, and they provide walk-in care for vast numbers of persons who face financial or other barriers to receiving care elsewhere.

Long-term care and rehabilitative services. People with physical or mental conditions that limit their capacity for self-care need long-term care and rehabilitative services. This population covers persons of all ages, from those who were born with physical or mental limitations or who developed such limitations later on in life, including those injured at any age, to those with diminishing functioning at older ages.[10] About 40 percent of the people in this population are under age 65 years.[11] The long-term care population includes individuals who need help or supervision to perform activities of daily living or instrumental activities of daily living.

The goals of long-term care services are to improve functioning, maintain existing functioning, or slow deterioration in functioning while delivering care in the least restrictive environment. Rehabilitative services, a critical component of long-term care, strive to return individuals to their optimal level of functioning. People in the long-term care population need access to a range of services, including nursing home care, home health care, adult day care, assisted living, and hospice care.

Trends

A significant measure of the access problem is the proportion of people who have health insurance. Following declines in the proportion of people with health insurance during the 1980s, the proportion has remained essentially level, at 85 percent in 1997 for persons under age 65 years.[12] Approximately 44.3 million persons lacked health insurance in 1998, continuing an increase in the number of uninsured. At the same time, the proportion with a usual source of care—an important predictor of access to needed services—fell from 83 percent to 78 percent between 1987 and 1992 before rising to 84 percent in 1997.[13] Although the lack of health insurance is clearly a major factor impeding access to care, having health insurance does not guarantee that health care will be accessible or affordable. Significant numbers of privately insured persons lack a usual source of care or report delays or difficulties in accessing needed care due to affordability or insurance problems.[14]

As a result of growing scientific evidence on the effectiveness of certain preventive services, 82 percent of employer-sponsored insurance plans include childhood immunizations, and 90 percent include Pap tests and mammograms. Nonetheless, gaps persist in coverage for effective preventive services, especially counseling.[4]

Concerns increasingly are focused on access to quality emergency services, long-term care, and rehabilitative services. Although emergency services are widely available in the United States, the range of services varies in accessibility and quality from region to region and, often, from neighborhood to neighborhood, raising additional concerns about care for vulnerable underserved populations. As the proportion of older Americans in the total population increases, the demand for quality long-term care services and facilities also will increase. Quality rehabilitative care needs are evident across all populations, and access to rehabilitative care is a significant problem for people who lack health insurance or who are underinsured and are unable to pay for the type and quality of health care they need.

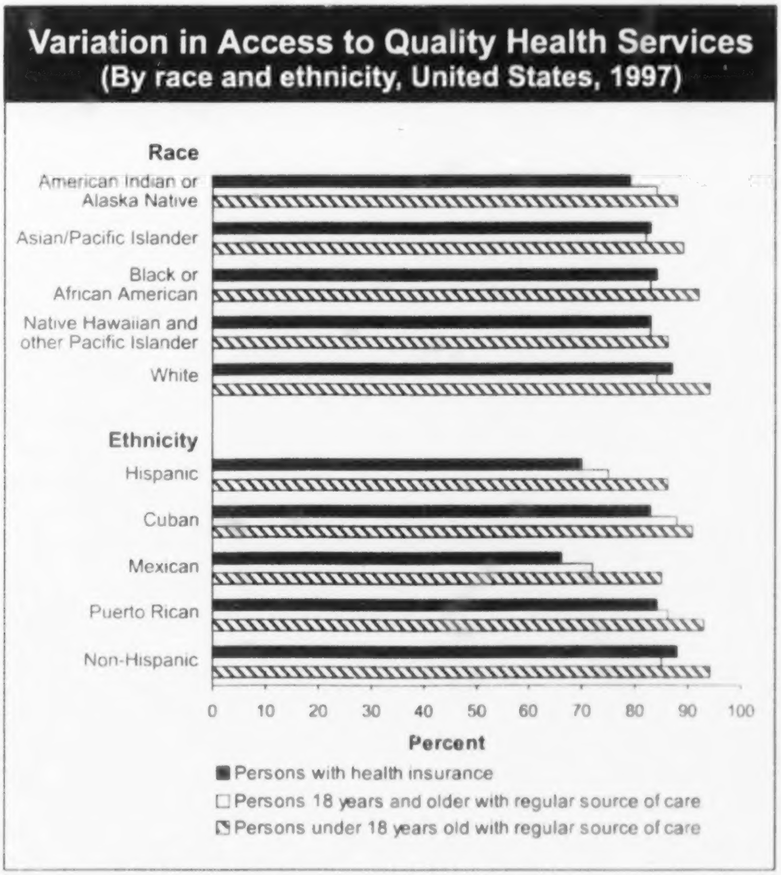
During the 1990s, increased attention has been paid at all levels of government as well as by the private sector to health care quality improvement. The National Committee for Quality Assurance (NCQA), a managed care accreditation group, has led a collaborative effort to develop the Health Plan Employer Data and Information Set (HEDIS), a widely used tool for evaluating health plan performance.[15] The Joint Commission for the Accreditation of Healthcare Organizations (JCAHO) also has developed performance measures. The Agency for Healthcare Research and Quality has developed the Consumer Assessment of Health Plans Survey (CAHPS), an instrument to assess consumer experiences with health plans, and the Healthcare Cost and Utilization Project (HCUP), which makes available State and nationwide estimates of hospital use. These data can be used with the HCUP Quality Indicators, providing measures of ambulatory-care sensitive conditions, which can uncover potential problems in access to primary care services. Quality monitoring systems tend to emphasize measures that focus on delivery rates for clinical preventive services because access to and use of these services are an important indicator of the quality of health care providers and of delivery systems. The complementary *National Report on Healthcare Quality* will explore methods for integrating the data from these quality monitoring systems with population-based data collected by the public sector.

The Federal Advisory Commission on Consumer Protection and Quality in the Health Care Industry was established in 1997 to study changes occurring in the health care system and recommend ways to ensure consumer protection and quality health care. The Commission's report provides a foundation for the emerging issues of the next decade in monitoring and reporting on quality of health care. It also includes a "Consumer Bill of Rights and Responsibilities,"[16] which is designed to strengthen consumer confidence in the health care system while holding participants in the system accountable for improving quality.[17]

The Institute of Medicine issued a report in December 1999 documenting the magnitude of medical errors in U.S. hospitals. The report recommended strategies to reduce such errors.[18]

Disparities

Limitations in access to care extend beyond basic causes, such as a shortage of health care providers or a lack of facilities. Individuals also may lack a usual source of care or may face other barriers to receiving services, such as financial barriers (having no health insurance or being underinsured), structural barriers (no facilities or health care professionals nearby), and personal barriers (cultural differences, language differences, not knowing what to do, or environmental challenges for people with disabilities). Patients with disabilities may face additional barriers arising from facilities that are not physically accessible or attitudes of clinicians. Hispanics, young adults, and uninsured persons are least likely to have a usual source of care.[12] Hispanic persons and those with less than 12 years of education are least likely to have a usual primary care provider.[19] Certain people, such as those who are disabled, elderly, chronically ill, or HIV-infected, require access to health care providers who have the knowledge and skills to address their special needs.[20]



Variation in Access to Quality Health Services
(By race and ethnicity, United States, 1997)

Source: National Health Interview Survey, CDC, NCHS, 1997 (age adjusted to the year 2000 population).

Substantial disparities remain in health insurance coverage for certain populations. Among the nonelderly population, approximately 31 percent of Hispanic persons lacked coverage in 1997, a rate that is double the national average. Mexican Americans had one of the highest uninsured rates at 35 percent. For adults under age 65 years, 33 percent of those below the poverty level were uninsured. Similar disparities exist in access to a specific source of ongoing care. An average of 84 percent of adults identified a specific source of ongoing care in 1997, but the proportions dropped to 75 percent for Hispanics and 75 percent for those below the poverty level.[12]

Opportunities

Increasing recognition of the critical role of preventive services across the continuum of care and the need for providers to incorporate preventive services into patient visits has led to the development of tools and projects designed to help providers and patients shift to a prevention-oriented health care system. HEDIS reports on the delivery of many clinical preventive services provided by health maintenance organizations (HMOs). The 1999 reporting set for HEDIS contained several measures of clinical preventive services, including childhood immunizations, adolescent immunizations, smoking cessation advice, influenza vaccinations for older adults, breast cancer screening, cervical cancer screening, and prenatal care in the first trimester. A CDC grant to the State of Massachusetts for a health assessment partnership has resulted in a collaborative effort in New England to increase HMO participation in HEDIS. The specific tools developed include the increased use of electronic birth certificates, which have assisted outreach programs to teach new mothers the value of periodic checkups for their infants.

One of the earliest and most recognized tool kits is the *Clinician's Handbook of Preventive Services*,[6] developed by the Office of Disease Prevention and Health Promotion and now the responsibility of AHRQ. It was produced as a companion to *Healthy People 2000* and the U.S. Preventive Services Task Force *Guide to Clinical Preventive Services*.[1] Under development is the CDC *Guide to Community Preventive Services*, due to be released in 2001.[21] The *Guide* will assess the effectiveness of preventive services and interventions in community settings and at the clinical systems level. It will cover 15 topics in three areas: changing risk behaviors, such as eliminating tobacco use and increasing physical activity; reducing specific diseases and injuries, such as cancer and injuries from motor vehicle crashes; and addressing environmental challenges, such as changing the sociocultural environment.

Continued progress in the delivery of clinical preventive services will require better collection and reporting of data on the delivery of recommended services by providers and health plans. This information will allow providers and administrators to identify the services and groups of people where the biggest gaps exist in receiving needed health care services. The best information systems allow both cross-sectional comparisons of performance by providers, plans, systems, and localities as well as long-term analyses of the health and health care of individuals. These systems can facilitate interventions such as reminders, audit, and feedback, which have been shown to improve rates of immunization and screening.[illegible]

In centralized health systems with stable populations (people who stay with one provider or health plan, for example), tracking of individuals has been used effectively for a limited number of services, primarily immunizations and cancer screenings. Expanding effective data collection efforts to cover additional services and to include more providers and health care systems is the current challenge. Measuring how well preventive care is provided under different systems is an essential first step in motivating those systems that are not performing well to develop the information, tools, and incentives to improve care.

Into the next decade, Healthy People and its partners will continue to promote communitywide efforts to provide clinical preventive services, using local leadership and insights to tailor and increase the accessibility of these services. Efforts will continue to promote the development of local prevention coalitions that include health departments, businesses, community institutions, and individuals from each community. Healthy People also will work to strengthen the capacity or ability of States and localities to collect health data and conduct community health assessments for small geographic areas.

Advances in the use of genetic information may improve both clinical and preventive care by helping to identify high-risk individuals and populations who will benefit most from preventive services and other clinical interventions. It will be essential to develop policies that will ensure appropriate evaluation of new genetic services, quality assurance of available genetic technology, and access to genetic services of proven benefit.

Overcoming technological, financial, or organizational barriers that can slow or block access to emergency services and improving emergency care accessibility and quality will require the combined effort of health care providers, health plans, and health care consumers as well as government agencies at the Federal, Tribal, State, and local levels.

Interim Progress Toward Year 2000 Objectives

The proportion of adults under age 65 years without health care coverage has remained essentially the same, while the total number of uninsured persons has continued to increase. The proportion of the adult population with a specific source of primary care has increased, although Hispanic and African American adults and other subgroups continue to be less likely to have a specific source of primary care. Compared to 1991 and 1992 baseline data, the proportion of adults in 1995 who received selected recommended clinical preventive services (including tetanus boosters and routine mammograms) has increased. Progress also has been made in improving racial and ethnic representation in the health professions.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Access to Quality Health Services

Goal: Improve access to comprehensive, high-quality health care services.

Number	Objective
Clinical Preventive Care	
1-1	Persons with health insurance
1-2	Health insurance coverage for clinical preventive services
1-3	Counseling about health behaviors
Primary Care	
1-4	Source of ongoing care
1-5	Usual primary care provider
1-6	Difficulties or delays in obtaining needed health care
1-7	Core competencies in health provider training
1-8	Racial and ethnic representation in health professions
1-9	Hospitalization for ambulatory-care-sensitive conditions
Emergency Services	
1-10	Delay or difficulty in getting emergency care
1-11	Rapid prehospital emergency care
1-12	Single toll-free number for poison control centers
1-13	Trauma care systems
1-14	Special needs of children
Long-Term Care and Rehabilitative Services	
1-15	Long-term care services
1-16	Pressure ulcers among nursing home residents

Clinical Preventive Care

1-1. Increase the proportion of persons with health insurance.

Target: 100 percent.

Baseline: 86 percent of the population was covered by health insurance in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Total coverage.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Total Population, 1997	Health Insurance Percent
TOTAL	86
Race and ethnicity	
American Indian or Alaska Native	79
Asian or Pacific Islander	83
Asian	83
Native Hawaiian and other Pacific Islander	83
Black or African American	84
White	87
Hispanic or Latino	70
Cuban	83
Mexican American	66
Puerto Rican	84
Not Hispanic or Latino	88
Black or African American	84
White	89
Gender	
Female	87
Male	85

Total Population, 1997	Health Insurance Percent
Family income level	
Poor	70
Near poor	74
Middle/high income	93
Location of residence	
Within metropolitan statistical area	86
Outside metropolitan statistical area	84
Disability status	
Persons with disabilities	85
Persons without disabilities	86

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Access to health services—including preventive care, primary care, and tertiary care—often depends on whether a person has health insurance.[24, 25, 26] Uninsured people are less than half as likely as people with health insurance to have a primary care provider; to have received appropriate preventive care, such as recent mammograms or Pap tests; or to have had any recent medical visits.[4] Lack of insurance also affects access to care for relatively serious medical conditions. Evidence suggests that lack of insurance over an extended period significantly increases the risk of premature death and that death rates among hospitalized patients without health insurance are significantly higher than among patients with insurance.[27] As demonstrated by a study of data from the National Health Interview Survey, Medicaid expansions that increase the proportion of a State's population eligible for Medicaid lead to increases in enrollment, enhanced utilization of medical services, and lower child death rates.[28] Another study showed that the chronically ill are even less likely than those with acute conditions to get health care services they need.[29]

1-2. (Developmental) Increase the proportion of insured persons with coverage for clinical preventive services.

Potential data source: Medical Expenditure Panel Survey (MEPS), AHRQ.

Insurance coverage for clinical preventive services improved substantially during the 1990s, but significant variations remain in the services covered, depending on the plan and type of insurance. In 1988, among employers who offer health insurance, only 26 percent of their employees were covered for adult physical examinations, 35 percent for well-child care (including immunizations), and 43 percent for preventive screening tests.[30] In contrast, a 1997 national survey of over 3,000 employers found that 88 percent of employer-sponsored plans covered well-baby care, 89 percent covered adult physical examinations, 92 percent covered gynecologic examinations, and 89 and 91 percent covered Pap tests and mammograms, respectively. Coverage was highest in HMO plans and lowest in indemnity insurance plans.[4]

Including effective clinical preventive services among the services routinely covered by insurance is an effective way to emphasize the importance of clinical preventive services as an integral part of health care.[31] The Balanced Budget Act of 1997 (Public Law 105-33) added colorectal cancer screening among other new preventive benefits under the Medicare program and expanded Medicare coverage of mammography and cervical cancer screening. Although health insurance by itself is not sufficient to eliminate existing gaps in the delivery of preventive services, it is an important factor in influencing who gets recommended services.[32, 33]

Selected clinical preventive services have a positive influence on personal health, and many are cost-effective in comparison with the treatment of disease.[1, 34] Insurance coverage is especially problematic for counseling services, in part because of the difficulty in proving the benefits of some counseling interventions. For example, only 22 percent of employer-sponsored plans cover medications or counseling for smoking cessation.[4] The effectiveness of smoking cessation counseling, however, is supported by strong evidence, with more intensive interventions having the greatest impact and most favorable cost-effectiveness ratio.[35]

1-3. (Developmental) Increase the proportion of persons appropriately counseled about health behaviors.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

Substantial gaps remain in the delivery of appropriate screening and counseling services related to health behaviors. Unhealthy diets, smoking, physical inactivity, and alcohol use account for a majority of preventable deaths in the United States.[36] Data indicate that risk assessment and counseling interventions are delivered less frequently than other preventive interventions (for example, cancer screenings).[15] In addition, the attention physicians give to specific health-risk behaviors appears to be influenced by the socioeconomic status of their patients.[37] Although time is an important constraint in the primary care setting, evidence demonstrates that brief clinician counseling is effective in getting patients to stop smoking and reduce problem drinking.[1, 38] In addition, more intensive dietary counseling can lead to reduced dietary fat and cholesterol intake and increased fruit and vegetable consumption.[1] Effective primary care-based interventions to increase physical activity have been more difficult to identify.[1, 39]

Some evidence shows that provider counseling can increase the use of seat belts, child safety seats, and bicycle helmets, especially when directed to parents of infants and young children.[1] Brief counseling interventions aimed at high-risk individuals can increase condom use and prevent new sexually transmitted diseases.[40]

Clinician counseling should be tailored to the individual risk factors, needs, preferences, and abilities of each patient.[1] For some preventive interventions, such as hormone therapy in post-menopausal women, the optimal strategy depends on how individual patients value potential benefits and risks. Counseling of perimenopausal and postmenopausal women should encourage shared decisionmaking based on individual risk factors and patient preferences.[1]

Primary Care

1-4. Increase the proportion of persons who have a specific source of ongoing care.

Target and baseline:

Objective	Increase in Persons With Specific Source of Ongoing Care	1997 Baseline*	2010 Target
		Percent	
1-4a.	All ages	86	96
1-4b.	Children and youth aged 17 years and under	93	96
1-4c.	Adults aged 18 years and older	84	96

*Age adjusted to the year 2000 standard population.

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Population by Age Group, 1997	Specific Source of Ongoing Care 1-4a. All Ages	 1-4b. Aged 17 Years and Under	 1-4c. Aged 18 Years and Older
		Percent	
TOTAL	86	93	84
Race and ethnicity			
American Indian or Alaska Native	86	88	84
Asian or Pacific Islander	84	89	82
Asian	84	90	82

Population by Age Group, 1997	Specific Source of Ongoing Care 1-4a. All Ages	 1-4b. Aged 17 Years and Under	 1-4c. Aged 18 Years and Older
		Percent	
Native Hawaiian and other Pacific Islander	84	86	83
Black or African American	85	92	83
White	87	94	84
Hispanic or Latino	78	86	75
Cuban	89	91	88
Mexican American	75	85	72
Puerto Rican	88	93	86
Not Hispanic or Latino	87	94	85
Black or African American	85	92	83
White	88	95	86
Gender			
Female	90	93	89
Male	82	93	79
Family income level			
Poor	78	86	75
Near poor	81	90	78
Middle/high income	90	96	87
Geographic location			
Urban	86	93	83
Rural	88	94	86
Disability status			
Persons with disabilities	89	95	86
Persons without disabilities	86	93	84

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Access to care depends in part on access to an ongoing source of care. People with a usual source of health care are more likely than those without a usual source of care to receive a variety of preventive health care services.[41, 42] An estimated 16 percent of adults in the Unites States lack a usual source of care. Thus, more than 40 million Americans have no particular doctor's office, clinic, health center, or other place where they go for health care advice. The National Health Interview Survey (NHIS) does not count emergency departments as a usual source of care.[13]

An estimated 93 percent of children aged 17 years and under have a specific source of ongoing care. The implementation of the Children's Health Insurance Program in 1999 provides a mechanism for increasing the proportion of children with an ongoing source of care.

The usual source of care can vary among groups according to their age, race and ethnicity, and health insurance coverage. Young children and elderly adults aged 65 years and older are most likely to have a usual source of care, and adults aged 18 to 64 years are least likely. Young adults aged 18 to 24 years are the least likely of any age group to have a usual source of care. Among racial and ethnic groups, Hispanic persons are the least likely to have a usual source of care. Some 25 percent of the adult Hispanic population (and 28 percent of the Mexican American population) lack a usual source of care, compared to 17 percent of African Americans and 16 percent of the total adult population.

Some 88 percent of persons with a usual source use an office-based provider, and 11 percent use a hospital outpatient department or clinic. African Americans and Hispanics are more likely to use hospital-based providers (including hospital clinics and outpatient departments) as their usual source of care.[14]

Uninsured persons under age 65 years are more likely to lack a usual source of care (38 percent) than those who have either public or private insurance. When compared with their counterparts who have private health insurance, uninsured people under age 65 years are 2.6 times more likely to lack a usual source of care.

1-5. Increase the proportion of persons with a usual primary care provider.

Target: 85 percent.

Baseline: 77 percent of the population had a usual primary care provider in 1996.

Target setting method: Better than the best.

Data source: Medical Expenditure Panel Survey (MEPS), AHRQ.

Total Population, 1996	1-5. Have a Usual Primary Care Provider	Provider Has Office Hours at Night or on Weekends*	Provider Usually Asks About Prescription Medications and Treatments by Other Doctors*
		Percent	
TOTAL	77	37	59
Race and ethnicity			
American Indian or Alaska Native	79	37	64
Asian or Pacific Islander	72	36	57
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	74	34	60
White	77	37	59
Hispanic or Latino	64	32	52
Not Hispanic or Latino	78	37	60
Black or African American	74	34	60
White	79	38	60
Gender			
Female	80	37	61
Male	73	36	57
Education level (aged 18 years and older)			
Less than high school	69	24	53
High school graduate	74	32	58
At least some college	74	34	59
Geographic location			
Urban (MSA)	76	39	59
Rural (non-MSA)	78	29	60
Disability status			
Persons with activity limitations	DNA	DNA	DNA
Persons without activity limitations	DNA	DNA	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for office hours, prescription medications, and treatments are displayed to further characterize the practices of primary care providers.

A usual source of primary care helps people clarify the nature of their health problems and can direct them to appropriate health services, including specialty care.[43]

Primary care also emphasizes continuity, which implies that individuals use their primary source of care over time for most of their health care needs. More after-hours care, shorter travel time to a practice site, and shorter office waits have been associated with patients' beginning an acute episode of care with primary care physicians. Greater continuity has been observed for individuals with shorter appointment waits, insurance, and access to more after-hours care.[44] Other advantages of primary care are that a primary care provider deals with all common health needs (comprehensiveness) and coordinates health care services, such as referrals to specialists. Evidence suggests that first contact care provided by an individual's primary care provider leads to less costly medical care.[45]

1-6. Reduce the proportion of families that experience difficulties or delays in obtaining health care or do not receive needed care for one or more family members.

Target: 7 percent.

Baseline: 12 percent of families experienced difficulties or delays in obtaining health care or did not receive needed care in 1996.

Target setting method: Better than the best.

Data source: Medical Expenditure Panel Survey (MEPS), AHRQ.

Families, 1996	Experienced Difficulty or Delay in Receiving Health Care or Received No Health Care Percent
TOTAL	12
Race and ethnicity (head of household)	
American Indian or Alaska Native	15
Asian or Pacific Islander	14
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	10
White	12
Hispanic or Latino	15
Not Hispanic or Latino	11
Black or African American	10
White	11

Families, 1996	**Experienced Difficulty or Delay in Receiving Health Care or Received No Health Care** Percent
Gender (head of household)	
Female	DNA
Male	DNA
Family income level	
Below poverty	17
Near poverty	17
Middle/high income	9
Geographic location	
Urban (in MSA)	12
Rural (non-MSA)	12
Disability status	
Persons with activity limitations	DNA
Persons without activity limitations	DNA
Health insurance status of family	
All members private insurance	7
All members public insurance	12
All members uninsured	27

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

In 1996, according to the Medical Expenditure Panel Survey, 12.8 million families (11.6 percent) for a variety of reasons experienced difficulty or delay in obtaining care or did not receive needed health care services they thought they needed. In addition to a lack of insurance or underinsurance, barriers include a lack of appropriate referrals, travel distance to the provider, lack of transportation, and unavailability of specialists. Families experience barriers to care for a variety of reasons: inability to afford health care (60 percent); insurance-related causes (20 percent), including (1) the insurance company not approving, covering, or paying for care, (2) preexisting conditions for which insurance coverage often is restricted, (3) lack of access to required referrals, and (4) clinicians refusing to accept the family's insurance plan; and other problems (21 percent), such as transportation, physical barriers, communication problems, child care limitations, lack of time or information, or refusal of services.[14]

An additional source of information is the Robert Wood Johnson National Access to Care Survey. Results of the 1994 National Access to Care Survey suggest that some studies have missed substantial components of unmet needs by failing to include specific questions about supplementary health care services, such as prescription drugs, eyeglasses, dental care, and mental health care or counseling.[46] When specific questions were added about these services, the findings showed that 16.1 percent of respondents (approximately 41 million Americans) were unable to obtain at least one service they believed they needed. The highest reported unmet need was for dental care. This problem can be attributed partly to insufficient provider reimbursement, which discourages participation in plans even when the service is covered.

1-7. (Developmental) Increase the proportion of schools of medicine, schools of nursing, and other health professional training schools whose basic curriculum for health care providers includes the core competencies in health promotion and disease prevention.

Potential data source: Adaptation of the Prevention Self-Assessment Analysis, Association of Teachers of Preventive Medicine (ATPM).

Significant changes in the health care system and in the expectations of consumers are influencing the education of health care providers in the United States. For example, many medical schools are assessing the content of their predoctoral and postgraduate curricula.[47] Medical educators and medical schools are recognizing that physicians will need to be prepared to provide population-based preventive health care as well as high quality medical care to their patients.[48] This challenge exists for other health professionals, including nurses, nurse practitioners, physician assistants, and allied health personnel. This link between medicine and public health is essential to provide the highest quality health care possible to the U.S. population.

A core set of competencies for medical students in health promotion and disease prevention was developed by a task force established by the Association of Teachers of Preventive Medicine (ATPM) and the U.S. Department of Health and Human Services' Health Resources and Services Administration. The competencies, derived from the ATPM *Inventory of Knowledge and Skills Relating to Health Promotion and Disease Prevention*,[49] cover four categories: clinical prevention, quantitative skills, health services organization and delivery, and community dimensions of medical practice. Together, they address a wide spectrum of topics, including environmental health hazards and asthma management. This set of competencies will provide medical educators with measurable education outcomes in prevention education. The core competencies will be evaluated for potential adaptability to health provider education curricula in schools of nursing and health professional schools. The core competencies also will be reviewed for potential expansion to cover emerging issues and competencies in evaluating and responding to environmental health concerns and natural and man-made disasters. Because health care providers will have to address new health issues, policies, technologies, and practice guidelines over their careers, continuing education programs also need to be updated periodically.

1-8. In the health professions, allied and associated health profession fields, and the nursing field, increase the proportion of all degrees awarded to members of underrepresented racial and ethnic groups.

Target and baseline:

Objective	Increase in Degrees Awarded to Underrepresented Populations	1995–96 Baseline	2010 Target
		Percent	
	Health professions, allied and associated health fields*		
1-8a.	American Indian or Alaska Native	0.5	1.0
1-8b.	Asian or Pacific Islander	4.0	4.0
1-8c.	Black or African American	6.6	13.0
1-8d.	Hispanic or Latino	3.8	12.0
	Nursing		
1-8e.	American Indian or Alaska Native	0.7	1.0
1-8f.	Asian or Pacific Islander	3.2	4.0
1-8g.	Black or African American	6.9	13.0
1-8h.	Hispanic or Latino	3.4	12.0
1-8i.	**Medicine**	**Developmental**	
1-8j.	**Dentistry**	**Developmental**	
1-8k.	**Pharmacy**	**Developmental**	

*For the baselines, health professions includes dentistry.

Target setting method: Targets based on U.S. Bureau of the Census projections of the proportions of racial and ethnic groups in the population for the year 2000.

Data source: Data Systems of HRSA, Bureau of Health Professions.

Certain racial and ethnic groups and low-income communities lag behind the overall U.S. population on virtually all health status indicators, including life expectancy and infant death. Furthermore, access to health care is a problem, and these groups often lack a specific source of care. Increasing the number of health professionals from certain racial and ethnic groups is viewed as an integral part of the solution to improving access to care.

Members of underrepresented racial or ethnic groups make up about 25 percent of the U.S. population. Their representation among health professionals, however, is in the range of 10 percent. Several studies have shown that minority health professionals are more likely to serve areas with high proportions of underrepresented racial and ethnic groups and to practice in or near designated health care shortage areas.[50, 51]

Despite considerable efforts to increase the number of representatives of racial or ethnic groups in health profession schools (medicine, dentistry, nursing, pharmacy, and allied and associated health professions), the percentage of such entrants, enrollees, and graduates has not advanced significantly and in some cases has not advanced at all since 1990. The targets set for Healthy People 2000 for such enrollment and graduation were not achieved, and achieving the revised targets by 2010 presents a significant challenge. Additional attention will need to be given to such efforts as providing financial assistance for underrepresented racial and ethnic group students to pursue health care degrees, encouraging mentor relationships, promoting the early recruiting of students from racial and ethnic groups before they graduate, and increasing the number of racial and ethnic group faculty and administrative staff members in schools that train health care professionals. Other suggested approaches to improving culturally appropriate care for ethnic and minority populations include increasing cultural competency among all health workers and increasing the number of lay health workers from underrepresented racial and ethnic groups.

1-9. Reduce hospitalization rates for three ambulatory-care-sensitive conditions—pediatric asthma, uncontrolled diabetes, and immunization-preventable pneumonia and influenza in older adults.

Target and baseline:

Objective	Reduction in Hospitalizations for Ambulatory-Care-Sensitive Conditions	1996 Baseline	2010 Target
		Admissions per 10,000 Population	
1-9a.	Pediatric asthma—persons under age 18 years	23.0	17.3
1-9b.	Uncontrolled diabetes—persons aged 18 to 64 years	7.2	5.4
1-9c.	Immunization-preventable pneumonia or influenza—persons aged 65 years and older	10.6	8.0

Target setting method: 25 percent improvement.

Data source: Healthcare Cost and Utilization Project (HCUP), AHRQ.

Persons With Ambulatory-Care-Sensitive Conditions by Age Group, 1996	Hospitalizations 1-9a. Persons Under Age 18 Years With Asthma	 1-9b. Persons Aged 18 to 64 Years With Diabetes	 1-9c.Persons Aged 65 Years and Older With Preventable Pneumonia or Influenza
	Admissions per 10,000		
TOTAL	23.0	7.2	10.6
Race and ethnicity			
American Indian or Alaska Native	DNC	DNC	DNC
Asian or Pacific Islander	DNC	DNC	DNC
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	DNC	DNC	DNC
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Gender			
Female	18.2	7.0	9.1
Male	27.6	7.4	12.6
ZIP code income level *			
$25,000 or less	52.0	18.8	21.1
$25,001 to $35,000	22.3	6.7	9.2
More than $35,000	10.6	2.9	6.0
Insurance status			
Private	15.7	3.7	DNA
Medicaid	45.9	23.5	DNA
Uninsured	8.3	6.3	NA

*Income of patient is the median income for the postal ZIP Code of residence.

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable. NA = Not applicable.

Comprehensive primary care services can reduce the severity of certain illnesses. Hospital admission rates for "ambulatory-care-sensitive conditions" serve as an indicator for both limited access to primary care and evidence of low-quality primary care. Disparities in hospital admission rates for racial and ethnic groups and low-income populations have been well documented.[52,53]

The three indicators selected here represent common problems encountered in primary care and allow monitoring of hospitalization rates for children (asthma), working-age adults (diabetes), and elderly persons (pneumonia and influenza). For each of these conditions, interventions can reduce hospitalization rates. Advances in the management of asthma have reduced its adverse health effects. Primary care can prevent both acute problems and long-term consequences of diabetes. Illness and death from preventable pneumonia and influenza among elderly persons can be avoided through the use of pneumococcal and influenza vaccines. These three conditions have been chosen because coordination of community preventive services, public health interventions, clinical preventive services, and primary care can reduce levels of these illnesses. To be effective, these services must be culturally competent and linguistically appropriate.[54]

This objective can be achieved by targeting high-risk populations. Because multiple factors besides access and quality contribute to the admission rates for ambulatory-care-sensitive conditions, each State will need to examine its rates and interpret them in the context of its population, health system, and community characteristics, and need to implement corresponding strategies. The objective is to improve primary care and preventive services and thereby reduce the need for hospital admission and the extended illness and costs associated with hospitalization.[55,56,57,58]

It should be noted that the privately insured have admission rates that are half those of the national average, indicating what is potentially achievable. Because of data limitations and potential access barriers to hospital admission among the uninsured, the Medicaid rate is artificially high and the uninsured rate is artificially low. (See Volume III for more information.) Data by race are not included because these data are reported at the State level. State-level hospital discharge databases can provide accurate estimates of racial and ethnic disparities in hospital admission rates at the State level. There are substantial disparities in hospital admission rates for pediatric asthma and uncontrolled diabetes by race and ethnicity. The magnitude of this disparity also fluctuates by State, suggesting that access to care and quality may play a role. Specifically, among seven States for which rates were determined, the age- and gender-adjusted relative risk of hospitalization for pediatric asthma ranged from 2.3 to 5.8 for African Americans and 1.3 to 2.6 for Hispanics compared to non-Hispanic whites. For uncontrolled diabetes, the relative risk of hospitalization ranged from 3.0 to 4.4 for African Americans and 1.2 to 2.0 for Latinos compared to non-Hispanic whites. AHRQ is developing a Minority National Inpatient Sample as part of HCUP that will provide national estimates of disparities in avoidable hospitalization rates by race and ethnicity.

Emergency Services

1-10. (Developmental) Reduce the proportion of persons who delay or have difficulty in getting emergency medical care.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

Emergency services are a vital part of access to health care in the United States. All population groups, regardless of their socioeconomic, health, or insurance status, want to know that emergency services will be available and will function quickly and effectively when needed.[60] This broadly shared social expectation was reinforced by landmark Federal legislation, the Emergency Medical Treatment and Active Labor Act (EMTALA) of 1986. EMTALA stipulates that anyone seeking care at a hospital emergency department (ED) must receive a medical screening examination for an emergency medical condition and appropriate stabilizing measures.[61]

For many people, however, a variety of barriers continue to block access to emergency departments when the need for emergency medical care arises.[60] Among these barriers are psychological and cultural factors that may keep some people, even if insured, from seeking care promptly; financial constraints that may inhibit some people, even if insured, from seeking care promptly; and shortcomings in the number, location, or capability of EDs in a specified geographic area.

A significant component of this objective is to reduce the proportion of people whose access to emergency services is blocked by their health insurance coverage or payment policies. These policies affect access to hospital emergency departments and, in some instances, use of prehospital emergency services.[61] Typically, these policies stipulate that unless an enrollee's condition is life threatening, the enrollee or the ED must obtain authorization before an ED visit or risk that a claim for services will be denied. In some cases, claims for ED visits can be denied retroactively if they are deemed medically unnecessary. The rationale for these coverage and payment policies is clear: to manage care and contain costs. These policies, however, discourage some enrollees from receiving emergency treatment when and where it is warranted.[62]

Concerns about access barriers have prompted Federal, State, and organizational groups to seek assurances that health coverage or payment policies will provide payment when people go to an ED with acute symptoms of sufficient severity—including severe pain—such that a prudent layperson could reasonably expect that the lack of medical attention could result in serious jeopardy, serious impairment to bodily functions, or serious dysfunction of any bodily organ or part.

1-11. (Developmental) Increase the proportion of persons who have access to rapidly responding prehospital emergency medical services.

Potential data source: Annual Survey of EMS Operations, International Association of Fire Fighters.

The outcome of many medical emergencies depends on the prompt availability of appropriately trained and properly equipped prehospital emergency medical care providers. In urban areas, this capability is defined by an interval of less than 5 minutes from the time an emergency call is placed to arrival on the scene for at least 90 percent of first-responder emergency medical services and less than 8 minutes for at least 90 percent of transporting EMS. In rural areas, this capability is defined as an interval of less than 10 minutes from the time an emergency call is placed to arrival on the scene for at least 80 percent of EMS responses.

Assuring a prompt response requires a well-coordinated system of care involving a variety of organizations and agencies, some of which are outside the traditional health care arena. The components include public awareness of how and whom to call for emergency assistance and public education concerning initial lifesaving emergency care procedures to be followed until the arrival of EMS providers. They also include access via a 911 or enhanced 911 system or, in rural areas, a uniform addressing system that allows emergency responders to locate quickly the person requesting emergency assistance; the availability of well-trained and appropriately certified response personnel, who are frequently from law enforcement or fire services; transportation (ground, air, or water ambulance); medical direction and oversight; and destination hospitals that are well-equipped and appropriately staffed.

1-12. Establish a single toll-free telephone number for access to poison control centers on a 24-hour basis throughout the United States.

Target: 100 percent.

Baseline: 15 percent of poison control centers shared a single toll-free number in 1999.

Target setting method: Total coverage.

Data source: Annual Survey of U.S. Poison Control Centers, American Association of Poison Control Centers.

Poison control centers (PCCs) are staffed on a 24-hour basis by toxicologists and specialists in poison information who respond to requests from the general public and health care professionals for immediate information and treatment advice about poisonings and toxic exposures. Local or toll-free telephone calls to PCC hotline numbers provide primary access to these services. Each year more than 2 million callers seek telephone assistance from PCCs throughout the United

States.[63] When a caller reports a poisoning or toxic exposure, a PCC toxicologist or specialist in poison information assesses the severity of the incident, advises the caller about treatment, and makes referrals for further medical attention when necessary. PCCs respond to inquiries in languages other than English by using language-translation services, interpreters, or bilingual staff members. PCCs manage most incidents by providing telephone advice to a caregiver at home, avoiding the need for more costly care at a hospital emergency department or another health care facility.

Linking all PCCs in the United States through a single toll-free telephone number and consolidating several key PCC functions can make contacting PCCs easier and more cost-effective.[64, 65] When PCCs are linked through a common telephone number, callers can be routed automatically to the nearest PCC based on their area code, telephone exchange number, and ZIP Code. Educational efforts could focus on a single easy-to-remember emergency number that permits callers to access PCCs quickly. Incorporating all PCCs under the umbrella of a toll-free nationwide telephone number will help ensure access to poison control services when and where they are needed.

1-13. Increase the number of Tribes, States, and the District of Columbia with trauma care systems that maximize survival and functional outcomes of trauma patients and help prevent injuries from occurring.

Target: All Tribes, States, and the District of Columbia.

Baseline: 5 States had trauma care systems in 1998.

Target setting method: Total coverage.

Data sources: State EMS Directors Survey, National Association of State EMS Directors; IHS (Tribal data are developmental).

A trauma care system is an organized and coordinated effort in a defined geographic area to deliver the full spectrum of care to injured patients. The main goals of the system are to match the available trauma care resources in a community, region, or State with the needs of individual patients and to ensure that patients have rapid access to the acute care facility and rehabilitation services they need. In a trauma care system, prehospital, acute care, and rehabilitation services are integrated and administered by a public agency that provides leadership, coordinates service delivery, establishes minimum standards of care, designates trauma centers (which offer 24-hour specialized treatment for the most severely injured patients), and fosters ongoing system evaluation and quality improvement.

Trauma care systems traditionally have focused on preventing adverse outcomes in the event of injury. Many trauma care professionals and people in the public health field believe that trauma care systems also should contribute to the prevention of injuries.[66] Trauma care professionals are in a good position to provide leadership in injury surveillance, clinical preventive services, and communitywide injury prevention programs. Recent Federal initiatives in trauma care have resulted in the design of a model system that incorporates public information, education, and prevention of injuries as key features.[67]

Results of a national survey conducted in 1993 indicated that only 5 States had complete trauma systems, but 19 other States and the District of Columbia had at least some trauma system components in place.[68] A survey of all 50 States and the District of Columbia in 1998 again indicated that only 5 States satisfied all trauma care system criteria.[69] However, results from this survey also showed that 37 other States and the District of Columbia had at least some trauma system components in place.

1-14. Increase the number of States and the District of Columbia that have implemented guidelines for prehospital and hospital pediatric care.

1-14a. Increase the number of States and the District of Columbia that have implemented statewide pediatric protocols for online medical direction.

Target: All States and the District of Columbia.

Baseline: 18 States had implemented statewide pediatric protocols for online medical direction in 1997.

Target setting method: Total coverage.

Data source: Emergency Medical Services for Children Annual Grantees Survey, HRSA.

Emergency medical service systems try to bring essential prehospital medical treatment to patients as quickly as possible. Emergency care of children present a particular challenge since prehospital providers often treat fewer children and have limited pediatric experience and assessment skills. It can be more difficult to assess the severity of illness or injury since characteristic changes in vital signs that signal deterioration in adults may not occur in children. Important anatomic, physiologic, and developmental differences exist between children and adults that affect their responses to medical care and their risk of injury and illness.[70] Most EMS systems operate independently of hospitals or other facilities and typically have few physicians to ensure appropriateness of care.

Experienced providers can offer medical direction in two ways, either online or offline. Online direction involves direct communication (for example, voice) between EMS medical directors (for example, at hospitals) and emergency medical technicians (EMTs) and paramedics to authorize and guide the care of patients at the scene and during transport. Offline medical direction includes the development of guidelines, protocols, procedures, and policies, as well as planning for, training in, and evaluation of their use.

1-14b. Increase the number of States and the District of Columbia that have adopted and disseminated pediatric guidelines that categorize acute care facilities with the equipment, drugs, trained personnel, and other resources necessary to provide varying levels of pediatric emergency and critical care.

Target: All States and the District of Columbia.

Baseline: 11 States had adopted and disseminated pediatric guidelines that categorize acute care facilities with the equipment, drugs, trained personnel, and other resources necessary to provide varying levels of pediatric emergency and critical care in 1997.

Target setting method: Total coverage.

Data source: Emergency Medical Services for Children Annual Grantees Survey, HRSA.

Emergency care for life-threatening pediatric illness and injury requires specialized resources, medical direction, equipment, drugs, trained personnel, and properly staffed and equipped hospitals.[70] Children, however, receive emergency care in a variety of settings—from rural community hospitals to large urban medical centers. Hospitals vary in terms of their readiness to treat children's emergencies. If the hospitals are properly equipped and staffed, children frequently can receive the care that they need at local hospitals, but some children require the advanced care available only at regional specialty centers. Categorization is essentially an effort to identify the readiness and capability of a hospital and its staff to provide optimal emergency care.[71] Compliance can be voluntary or assigned by official agencies.

Long-Term Care and Rehabilitative Services

1-15. (Developmental) Increase the proportion of persons with long-term care needs who have access to the continuum of long-term care services.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

The long-term care population needs access to a range of services, including nursing home care, home health care, adult day care, assisted living, and hospice care.[72] Persons with long-term care needs require the help of other persons to perform activities of daily living (personal care activities) and instrumental activities of daily living (routine needs). Access problems are viewed as a need for specified long-term care services that were not received in the past 12 months.

Long-term care crosses the boundaries of different types of care—from health to social—and intensity of services—from periodic home health and homemaker visits to round-the-clock subacute care. Access to the full range of long-term care services continues to be a problem because of financial barriers and the limited availability of specific services.[11, 75] Although people in the long-term care population and their caregivers prefer long-term care to be delivered in the least restrictive environment, limited access and limited knowledge about care options can result in a long-term care population that is more dependent than necessary. The long-term care services selected cover key services in institutions, in the home, and in the community. Access to this range of services in rural areas is often difficult.

1-16. Reduce the proportion of nursing home residents with a current diagnosis of pressure ulcers.

Target: 8 diagnoses per 1,000 residents.

Baseline: 16 diagnoses of pressure ulcer per 1,000 nursing home residents in 1997.

Target setting method: Better than the best.

Data source: National Nursing Home Survey (NNHS), CDC, NCHS.

Nursing Home Residents, 1997	**Pressure Ulcers** Diagnoses per 1,000
TOTAL	16
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	DSU
White	14
Hispanic or Latino	DSU
Not Hispanic or Latino	15
Black or African American	DSU
White	13
Gender	
Female	14
Male	20

Nursing Home Residents, 1997	Pressure Ulcers Diagnoses per 1,000
Education level	
Less than high school	DNA
High school graduate	DNA
At least some college	DNA
Geographic location	
Urban	17
Rural	12
Disability status	
Persons with disabilities	16
Persons without disabilities	DSU

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Pressure ulcers in all settings are sufficiently common to warrant concern, particularly as a quality-of-care issue. A significant number of people are at risk for pressure ulcers in nursing homes. Older adults are particularly prone to pressure ulcers as a result of decreased mobility, multiple contributing diagnoses, loss of muscle mass, and poor nutrition. About 24 percent of the Nation's 1.4 million nursing home residents require the assistance of another person to transfer from bed to chair.

According to studies of the treatment of pressure ulcers, it is difficult to determine the exact extent of the problem, including the number of new cases and the number of people who have pressure ulcers. Pressure ulcers have long been recognized as a serious quality-of-care problem in both acute care facilities and nursing homes.[74, 75] The prevention of pressure ulcers depends on close observation, appropriate nutrition, and effective nursing care. The number of new cases of pressure ulcers could indicate the overall quality of care provided to nursing home residents. Evidence-based guidelines have been issued on the prevention and treatment of pressure ulcers.[76]

Related Objectives From Other Focus Areas

2. Arthritis, Osteopororis, and Chronic Back Conditions

2-2. Activity limitations due to arthritis
2-3. Personal care limitations
2-6. Racial differences in total knee replacement
2-7. Seeing a health care provider
2-11. Activity limitations due to chronic back conditions

3. Cancer

3-10. Provider counseling about preventive measures
3-11. Pap tests
3-12. Colorectal cancer screening
3-13. Mammogram

5. Diabetes

5-1. Diabetes education
5-4. Diagnosis of diabetes
5-11. Annual urinary microalbumin measurement
5-12. Annual glycosylated hemoglobin measurement
5-13. Annual dilated eye examination
5-14. Annual foot examinations
5-15. Aspirin therapy

6. Disability and Secondary Conditions

6-7. Congregate care of children and adults with disabilities
6-10. Accessibility of health and wellness programs

7. Educational and Community-Based Programs

7-2. School health education
7-3. Health-risk behavior information for college and university students
7-5. Worksite health promotion programs
7-7. Patient and family education
7-8. Satisfaction with patient education
7-12. Older adult participation in community health promotion activities

9. Family Planning

9-1. Intended pregnancy
9-2. Birth spacing
9-3. Contraceptive use
9-5. Emergency contraception
9-6. Male involvement
9-10. Pregnancy prevention and sexually transmitted disease protection
9-11. Pregnancy prevention education
9-13. Insurance coverage for contraceptive supplies and services

11. Health Communication

11-2 Health literacy
11-6 Satisfaction with providers' communication skills

12. Heart Disease and Stroke

12-1. Coronary hearth disease (CHD) deaths
12-15. Blood cholesterol screening

13. HIV

13-6. Condom use
13-8. HIV counseling and education for persons in substance abuse treatment
13-9. HIV/AIDS, STD, and TB education in State prisons
13-10. HIV counseling and testing in State prisons

14. Immunization and Infectious Diseases

14-5. Invasive pneumococcal infections
14-22. Universally recommended vaccination of children aged 19 to 35 months
14-23. Vaccination coverage for children in day care, kindergarten, and first grade
14-24. Fully immunized children aged 19 to 35 months
14-25. Providers who measure childhood vaccination coverage levels
14-26. State/community population-based immunization registries for children
14-27. Vaccination coverage among adolescents
14-28. Hepatitis B vaccination among high-risk groups
14-29. Flu and pneumococcal vaccination of high-risk adults

15. Injury and Violence Prevention

15-7. Nonfatal poisoning
15-8. Deaths from poisoning
15-10. Emergency department surveillance systems
15-12. Emergency department visits
15-19. Safety belts
15-20. Child restraints
15-21. Motorcycle helmet use
15-23. Bicycle helmet use
15-24. Bicycle helmet laws

16. Maternal, Infant, and Child Health

16-1. Fetal and infant deaths
16-2. Child deaths
16-3. Adolescent and young adult deaths
16-17. Prenatal substance exposure
16-18. Fetal alcohol syndrome
16-20. Newborn bloodspot screening
16-22. Medical home for children with special health care needs
16-23. Service systems for children with special health care needs

17. Medical Product Safety

17-3. Provider review of medications taken by patients
17-5. Receipt of oral counseling from prescribers and dispensers

18. Mental Health and Mental Disorders

18-6. Primary care screening and assessment
18-7. Treatment for children with mental health needs
18-8. Juvenile justice facility screening
18-9. Treatment for adults with mental disorders
18-10. Treatment for both co-occurring disorders
18-11. Adult jail diversion
18-12. State tracking of consumer satisfaction
18-13. State plans addressing cultural competence
18-14. State plans addressing elderly persons

19. Nutrition and Overweight

19-1. Healthy weight in adults
19-2. Obesity in adults
19-3. Overweight or obesity in children and adolescents
19-4. Growth retardation in children
19-17. Nutrition counseling for medical conditions
19-18. Food security

21. Oral Health

21-7. Annual examinations for oral and pharyngeal cancer
21-10. Use of oral health care system
21-11. Use of oral health care system by residents in long-term care facilities
21-13. School-based health centers with oral health component
21-14. Health centers with oral health service components
21-15. Referral for cleft lip or palate
21-16. State-based surveillance system
21-17. Tribal, State, and local dental programs

22. Physical Activity and Fitness

22-12. School physical activity facilities

22-13. Worksite physical activity and fitness
22-14. Community walking
22-15. Community bicycling

23. Public Health Infrastructure

23-1. Public health employee access to Internet
23-2. Public access to information and surveillance data
23-3. Use of geocoding in health data systems
23-8. Competencies for public health workers
23-9. Training in essential public health services
23-10. Continuing education and training by public health agencies
23-12. Health improvement plans
23-13. Access to public health laboratory services
23-14. Access to epidemiology services

24. Respiratory Diseases

24-6. Patient education
24-7. Appropriate asthma care
24-11. Medical evaluation and followup

25. Sexually Transmitted Diseases

25-11. Responsible adolescent sexual behavior
25-13. Hepatitis B vaccine services in STD clinics
25-14. Screening in youth detention facilities and jails
25-15. Contracts to treat nonplan partners of STD patients
25-16. Annual screening for genital chlamydia
25-17. Screening of pregnant women
25-18. Compliance with recognized STD treatment standards
25-19. Provider referral services for sex partners

26. Substance Abuse

26-18. Treatment gap for illicit drugs
26-20. Treatment of injection drug users
26-21. Treatment gap for problem alcohol use
26-22. Hospital emergency department referrals

27. Tobacco Use

27-6. Smoking cessation by adults
27-7. Smoking cessation by adolescents
27-8. Insurance coverage of cessation treatment

28. Vision and Hearing

28-1. Dilated eye examination
28-2. Vision screening for children
28-10. Vision rehabilitation services and devices
28-11. Newborn hearing screening
28-13. Rehabilitation for hearing impairment
28-14. Hearing examination
28-15. Evaluation and treatment referrals

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Access: According to the Institute of Medicine, "The timely use of personal health services to achieve the best possible health outcomes."[54] This definition includes both the use and effectiveness of health services. The concept of access also encompasses physical accessibility of facilities.

Activities of daily living (ADL): Personal care activities, such as bathing, dressing, eating, and getting around (with special equipment, if needed) inside the home

Acute care facility: A health facility that provides care on a short-term basis. Included are community hospitals with an average length of stay of less than 30 days for all patients.

Ambulatory care: Health care that does not require the patient to stay in a hospital or other facility, such as care provided on an outpatient basis.

Ambulatory-care-sensitive conditions: Conditions resulting in hospitalization that could potentially have been prevented if the person had improved access to high-quality primary care services outside the hospital setting.

Asymptomatic: Without symptoms. This term may apply either to healthy persons or to persons with preclinical (prior to clinical diagnosis) disease in whom symptoms are not yet apparent.

Clinical care: The provision of health care services to individual patients by trained health care professionals.

Clinical preventive services (CPS): Common screening tests, immunizations, risk assessment, counseling about health risk behaviors, and other preventive services routinely delivered in the clinical setting for the primary prevention of disease or for the early detection of disease in persons with no symptoms of illness.

Continuum of care: The array of health services and care settings that address health promotion, disease prevention, and the diagnosis, treatment, management, and rehabilitation of disease, injury, and disability. Included are primary care and specialized clinical services provided in community and primary care settings, hospitals, trauma centers, and rehabilitation and long-term care facilities.

Core competencies: A defined set of skills and knowledge considered necessary in the educational curricula for training health care providers. Examples of core competencies include skills in prevention education; skills in using sources of health data to identify what clinical preventive services should be delivered to the individual patient based on that person's age, gender, and risk factor status; an understanding of the U.S. public health system (local and State health departments) and its role in monitoring and maintaining the health of the community; and skills to evaluate and translate medical and scientific research reports into clinical practice.

Emergency services: Health care services that are needed or appear to be needed immediately because of injury or sudden illness that threatens serious impairment of any bodily function or serious dysfunction of any bodily part or organ.[17]

Functional assessment: A health care provider's review of a patient for the ability to perform activities of daily living (personal care activities) and instrumental activities (routine needs) of daily living. (See also *Persons with long-term care needs*.)

Health intervention: Any measure taken to improve or promote health or to prevent, diagnose, treat, or manage disease, injury, or disability.

Health outcomes: The results or consequences of a process of care. Health outcomes may include satisfaction with care as well as the use of health care resources. Included are clinical outcomes, such as changes in health status and changes in the length and quality of life as a result of detecting or treating disease.

Instrumental activities for daily living: Routine activities, such as everyday household chores, shopping, or getting around for other purposes, that enable a person to live independently in the community.

Long-term care (LTC): A broad range of health and social services delivered in institutions, in the community, and at home. Long-term care services include institutional services, such as those delivered in nursing homes, rehabilitation hospitals, subacute care facilities, hospice facilities, and assisted living facilities; services delivered in the home, such as home health and personal care, hospice, homemaker, and meals; and community-based services, such as adult day care, social services, congregate meals, transportation and escort services, legal protective services, and counseling for clients as well as their caregivers.[10]

Managed care: According to the Institute of Medicine, "a set of techniques used by or on behalf of purchasers of health care benefits to manage health care costs by influencing patient care decisionmaking through case-by-case assessments of the appropriateness of care prior to its provision."[77]

Patient barriers: Any mental, physical, or psychosocial condition that prevents an individual from accessing needed health care. Examples include attitudes or biases, mental disorders or illnesses, behavioral disorders, physical limitations, cultural or linguistic factors, sexual orientation, and financial constraints.

Persons with long-term care needs: Persons who need the help of other persons to perform activities of daily living (personal care activities) and instrumental activities of daily living (routine needs).

Primary care: According to the Institute of Medicine, "The provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community."[8]

Primary care provider: A physician who specializes in general and family practice, general internal medicine, or general pediatrics; a nonphysician health care provider, such as a nurse practitioner, physician assistant, or certified nurse midwife.

Primary prevention: Measures such as health care services, medical tests, counseling, and health education designed to prevent the onset of a targeted condition. Routine immunization of healthy individuals is an example of primary prevention.[1]

Provider barriers: Any mental, physical, psychosocial, or environmental condition that prevents or discourages health care providers from offering preventive services. Examples of provider barriers include a poor practice environment, lack of knowledge, and lack of efficacy studies.

Quality: According to the Institute of Medicine, "The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."[78] Simply stated, it is doing the right thing, for the right patient, at the right time, with the right outcome.

Rehabilitative services: Services to restore specific skills, including overall physical mobility and functional abilities.

Secondary prevention: Measures such as health care services designed to identify or treat individuals who have a disease or risk factors for a disease but who are not yet experiencing symptoms of the disease. Pap tests and high blood pressure screening are examples of secondary prevention.[1]

System barriers: Conditions within a health care system that prevent people from accessing needed services or prevent health care providers from delivering those services. System barriers include physical, cultural, linguistic, and financial barriers as well as the availability of health care facilities or providers with special skills, such as eye, ear, nose, and throat specialists.

Tertiary prevention: Preventive health care measures or services that are part of the treatment and management of persons with clinical illnesses. Examples of tertiary prevention include cholesterol reduction in patients with coronary heart disease and insulin therapy to prevent complications of diabetes.[1]

Usual source of care: A particular doctor's office, clinic, health center, or other health care facility to which an individual usually would go to obtain health care services. Having a usual source of care is associated with improved access to preventive services and followup care.

Vulnerable and at-risk populations: High-risk groups of people who have multiple health and social needs. Examples include pregnant women, people with human immunodeficiency virus infection, substance abusers, migrant farm workers, homeless people, poor people, infants and children, elderly people, people with disabilities, people with mental illness or mental health problems or disorders, and people from certain ethnic or racial groups who do not have the same access to quality health care services as other populations.

References

1. U.S. Preventive Services Task Force. *Guide to Clinical Preventive Services*. 2nd ed. Washington, DC: U.S. Department of Health and Human Services, 1995.

2. Thompson, R.S.; Taplin, S.H.; McAfee, T.A.; et al. Primary and secondary prevention services in clinical practice. Twenty years' experience in development, implementation, and evaluation. *Journal of the American Medical Association* 273:1130-1135, 1995.

3. Solberg, L.I.; Kottke, T.E.; Brake, M.L.; et al. The case of the missing clinical preventive services systems.

Effective Clinical Practice 1(1):33-38, August/September 1998.

4. Partnership for Prevention. Results from the William M. Mercer Survey of Employer Sponsored Health Plans. Washington, DC: the Partnership, 1999.

5. American College of Preventive Medicine. *1998 National Prevention in Primary Care Study*. Washington, DC: the College, November 1998.

6. U.S. Department of Health and Human Services. *Clinician's Handbook of Preventive Services*. 2nd Ed. Washington, DC: U.S. Department of Health and Human Services, 1998.

7. National Committee for Quality Assurance. The State of Managed Care Quality. 1999.

8. Donaldson, M.S.; Yordy, K.D.; Lohr, K.N. (eds.). Institute of Medicine. *Primary Care: America's Health in a New Era*. Washington, DC: National Academy Press, 1996.

9. Josiah Macy, Jr. Foundation. The role of emergency medicine in the future of American medical care: Summary of the conference. *Annals of Emergency Medicine* 25:230-233, 1995.

10. Krane, R.A., and Kane, R.L. Long Term Care: Principles, Programs, and Policies. New York: Springer, 1987.

11. Wiener, J.M.; Illston, L.H.; and Hanley, R.J. Sharing the Burden: Strategies for Public and Private Long Term Care Insurance. Washington, DC: The Brookings Institution, 1994.

12. CDC, National Center for Health Statistics. *National Health Interview Survey*. Hyattsville, MD: National Center for Health Statistics, unpublished.

13. Benson, V., and Marano, M.A. Current estimates from the National Health Interview Survey, 1995. *Vital Health Statistics* 10(199), 1998.

14. Weinick, R.M.; Zuvekas, S.H.; and Drilea, S.K. *Access to Health Care—Sources and Barriers. 1996*. MEPS Research Findings No. 3. AHCPR Pub. No. 98-0001. Rockville, MD: The Agency for Health Care Policy and Research, 1997.

15. National Committee on Quality Assurance. *Health Plan Employer Data and Information Set (HEDIS 3.0)*. Washington, DC: National Committee on Quality Assurance, 1997.

16. Advisory Commission on Consumer Protection and Quality in the Health Care Industry. *Consumer Bill of Rights and Responsibilities—Report to the President*. Washington, DC: Advisory Commission, November 1997.

17. President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry. *Quality First: Better Health Care for All Americans: Final Report to the President of the United States*. Washington, DC: United States Government Printing Office, 1998.

18. Kohn, L.; Corrigan, J.; and Donaldson, M. (eds.). Committee on Quality of Health Care in America. *To Err Is Human: Building a Safer Health System*. Washington, DC: Institute of Medicine, 1999.

19. Agency for Healthcare Research and Quality. Unpublished tabulations of *Medical Expenditure Panel Survey* (MEDS) data, 1996.

20. Bierman, A.S. *Journal of Ambulatory Care Management* 21(3):17-26, 1998.

21. Truman, B.I.; Smith-Akin, C.K.; Hinman, A.R.; et al. Developing the *Guide to Community Preventive Services*—Overview and Rationale. *American Journal of Preventive Medicine*. January 2000 (In press).

22. Centers for Disease Control and Prevention. Vaccine-Preventable Diseases: Improving Vaccination Coverage in Children, Adolescents, and Adults. A Report on Recommendations of the Task Force on Community Preventive Services. *Morbidity and Mortality Weekly Report* 48(No. RR-8):1-16, 1999.

23. National Health Service, Center for Reviews and Dissemination. Getting Evidence Into Practice. *Effective Health Care*. 5(1), February, 1999.

24. Centers for Disease Control and Prevention. Health insurance coverage and receipt of preventive health services—United States, 1993. *Morbidity and Mortality Weekly Report* 44:219-225, 1995.

25. Weissman, J.S., and Epstein, A.M. The insurance gap: Does it make a difference? *Annual Review of Public Health* 14:243-270, 1993.

26. U.S. General Accounting Office. *Health Insurance: Coverage Leads to Increased Health Care Access for Children*. GAO/HEHS-98-14. Washington, DC: General Accounting Office, 1998.

27. Reinhardt, U.E. Coverage and access in health care reform. *New England Journal of Medicine* 330:1452-1453, 1994.

28. Currie, J., and Gruber, J. Health insurance eligibility, utilization of medical care, and child health. *Quarterly Journal of Economics* 111(2):431-466, May 1996.

29. Hafner-Eaton, C. Physician utilization disparities between the uninsured and insured: comparisons of the chronically ill, acutely ill, and well nonelderly populations. *Journal of the American Medical Association* 269:787-792, 1993.

30. Health Insurance Association of America. Research Bulletin: A Profile of Employer-Sponsored Group Health Insurance. Washington, DC: The Association, 1989.

31. Davis, K.; Bialek, R.; Parkinson, M.; Smith, and J.; Vellozzi, C. Paying for preventive care: moving the debate forward. *American Journal of Preventive Medicine* 64(suppl.):7-30, 1990.

32. Faust, H.S. Strategies for obtaining preventive services reimbursement. *American Journal of Preventive Medicine* 64(suppl.):1-5, 1990.

33. Faulkner, L.A., and Schauffler, H.H. The effect of health insurance coverage on the appropriate use of recommended clinical preventive services. *American Journal of Preventive Medicine* 13(6):453-458, November/December 1997.

34. Tengs, T.O.; Adams, M.E.; Pliskin, J.S., et al. Five-hundred life-saving interventions and their cost-effectiveness. *Risk Analysis* 15:369-390, 1995.

35. Cromwell, J.; Bartosch, W.J.; Fiore, M.C.; Hasselblad, V.; and Baker, T. Cost-effectiveness of the clinical practice recommendations in the AHCPR guideline for smoking cessation. *Journal of the American Medical Association* 278:1759-1766, 1997.

36. McGinnis, J.M., and Foege, W.H. Actual causes of death in the United States. *Journal of the American Medical Association* 270:2207-2212, 1993.

37. Taira, D.A.; Safran, D.G.; Seto, T.B.; Rogers, W.H.; and Tarlov, A.R. The relationship between patient income and physician discussion of health risk behaviors. *Journal of the American Medical Association* 278:1412-1417, 1997.

38. Fiore, M.C.; Bailey, W.C.; Cohen, S.J.; et al. *Smoking Cessation. Clinical Practice Guideline No. 18.* AHCPR Pub. No. 96-0692. Rockville, MD: U.S. Department of Health and Human Services, Agency for Health Care Policy and Research, 1996.

39. U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General.* Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.

40. Kamb, M.L.; Fishbein, M.; Douglas, J.M.; Rhodes, F.; et al. Efficiency of risk reduction counseling to prevent human immunodeficiency virus and sexually transmitted diseases. *JAMA* 280:1161-1167, 1998.

41. Moy, E.; Bartman, B.A.; and Weir, M.R. Access to hypertensive care: effects of income, insurance, and source of care. *Archives of Internal Medicine* 155(14):1497-1502, 1995.

42. Ettner, S.L. The timing of preventive services for women and children: the effect of having a usual source of care. *American Journal of Public Health* 86:1748-1754, 1996.

43. Starfield, B. *Primary Care: Balancing Health Needs, Services and Technology.* New York: Oxford University Press; 1998.

44. Forrest, C.B., and Starfield, B. Entry into primary care and continuity: the affects of access. *American Journal of Public Health* 88:1334, 1998.

45. Forrest, C.B., and Starfield, B. The effect of first-contact care with primary care clinicians on ambulatory health care expenditures. *Journal of Family Practice* 43:40-48, 1996.

46. Berk, M.L.; Schur, C.L.; and Cantor, J.C. Ability to obtain health care: Recent estimates from the RWJF National Access to Care Survey. *Health Affairs* 14(3):139-146, 1995.

47. Wallace, R.B.; Wiese, W.H.; Lawrence, R.S.; Runyan, J.W.; and Tilson, H.H. Inventory of knowledge and skills relating to disease prevention and health promotion. *American Journal of Preventive Medicine* 6:51-56, 1990.

48. Report on the population health perspective panel. *Academic Medicine* 74:138-141, 1999.

49. Wallace, R.B.; Wiese, W.H.; Lawrence, R.S.; et al. Inventory of knowledge and skills relating to disease prevention and health promotion. *American Journal of Preventive Medicine* 6:51-56, 1990.

50. Komaromy, M.; Grumbach, K.; Drake, M.; et al. The role of Black and Hispanic physicians in providing health care for under served populations. *New England Journal of Medicine* 334:1305-1310, 1996.

51. Cooper-Patrick, L.; Gallo, J.; Gonzales, J.; et al. Race, gender, and partnership in the patient-physician relationship. *Journal of the American Medical Association* 282:583-589, 1999.

52. Goodman, D.C.; Stukel, T.A.; and Chang, C.H. Trends in pediatric asthma hospitalization rates: regional and socioeconomic differences. *Pediatrics* 101:208-213, 1998.

53. Pappas, G.; Hadden, W.C.; Kozak, L.J.; and Fisher, G.F. Potentially avoidable hospitalizations: inequalities in rates between U.S. socioeconomic groups. *American Journal of Public Health* 87:811-816, 1997.

54. Carillo, J.E.; Green, A.R.; and Betancourt, J.R. Cross-cultural primary care: a patient-based approach. *Annals of Internal Medicine* 130(1):829-834, 1999.

55. Billings, J.; Anderson, G.M.; and Newman, L.S. Recent findings on preventable hospitalizations. *Health Affairs* 15(3):239-249, 1996.

56. Billings, J.; Zeitel, L.; Lukomnik, J.; Carey, T.S.; Blank, A.E.; and Newman, L. Impact of socioeconomic status on hospital use in New York City. *Health Affairs* 12(1):162-173, 1993.

57. Bindman, A.B.; Grumbach, K.; Osmond, D.; Komaromy, M.; Vranizan, K.; Lurie, N.; Billings, J.; and Stewart, A. Preventable hospitalizations and access to health care. *Journal of the American Medical Association* 274(4):305-311, 1995.

58. Weissman, J.S.; Gatsonis, C.; and Epstein, A.M. Rates of avoidable hospitalization by insurance status in Massachusetts and Maryland. *Journal of the American Medical Association* 268(17):2388-2394, 1992.

59. Millman, M., ed. Institute of Medicine. *Access to Health Care in America*. Washington, DC: National Academy Press, 1993.

60. Dane, L.A. The Emergency Medical Treatment and Active Labor Act: The anomalous right to health care. *Health Matrix* 8:3-28, 1998.

61. Young, C.J. Emergency! Says who?: Analysis of the legal issues concerning managed care and emergency medical services. *Journal of Contemporary Health Law and Policy* 13:553-579, 1997.

62. Young G.P., and Lowe R.A. Adverse outcomes of managed care gatekeeping. *Academic Emergency Medicine* 4:1129-1136, 1997.

63. Litovitz, T.L.; Klein-Schwartz, W.; Caravati, E.M.; et al. Annual Report of the American Association of Poison Control Centers: Toxic Exposure Surveillance System. *American Journal of Emergency Medicine* 17:435-487, 1999.

64. Zuvekas, A.; Nolan, L.S.; Azzouzi, A.; Tumaylle, C.; and Ellis, J. *An Analysis of Potential Economies of Scale in Poison Control Centers: Final Report*. Washington, DC: Center for Health Policy Research, Georgetown University Medical Center, 1997.

65. Poison Control Center Advisory Work Group. *Final Report*. Atlanta, GA, and Rockville, MD: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, and Maternal and Child Health Bureau, Health Resources and Services Administration, 1997.

66. Institute of Medicine, Committee on Injury Prevention and Control. In: Bonnie, R.J.; Fulco, C.E.; Liverman, C.T., eds. *Reducing the Burden of Injury: Advancing Treatment and Prevention*. Washington, DC: National Academy Press, 1999.

67. Health Resources and Services Administration. *Model Trauma Care System Plan*. Rockville, MD: Health Resources and Services Administration, Division of Trauma and Emergency Medical Systems, 1992.

68. Bazzoli, G.J.; Madura, K.J.; Cooper, G.F.; MacKenzie, E.J.; and Maier, R.V. Progress in the development of trauma systems in the United States: Results of a national survey. *Journal of the American Medical Association* 273:395-401, 1995.

69. Bass, R.R.; Gainer, P.S.; and Carlini, A.R. Update on trauma system development in the United States. *Journal of Trauma* 47(3 Suppl):515-521, 1999.

70. Institute of Medicine, Committee on Pediatric Emergency Medical Services. In: Durch, J.S., and Lohr, K.N., eds. *Emergency Medical Services for Children*. Washington, DC: National Academy Press, 1993.

71. American Academy of Pediatrics. Guidelines for pediatric emergency care facilities. *Pediatrics* 96:526-537, 1995.

72. Havens, B., and Beland, F., eds. Long-term care in five countries. *Canadian Journal on Aging* 15(suppl. 1):1-102, 1996.

73. Estes, C.L., and Swann, J.H. The Long Term Care Crisis. Newbury Park, CA: Sage Publications, 1993.

74. Spector, W., and Fortinsky, W. Pressure ulcer prevalence in Ohio nursing homes. *Journal of Aging and Health* 10(1):62-80, 1998.

75. Spector, W. Correlates of pressure sores in nursing homes: Evidence from the

National Medical Expenditure Survey. *Journal of Investigative Dermatology* 102(6):425-455, 1994.

76. The Pressure Ulcer Guideline Panel. *Treating Pressure Ulcers: Guideline Technical Report. No. 15. Volumes 1 and 2.* AHCPR Pub. No. 96-N014. Rockville, MD: Agency for Health Care Policy and Research, 1996.

77. Halverson, P.K.; Kaluzny, A.D.; and McLaughln, C.P.; Gaithersburg, MD: with Mays, G.P.; eds. *Managed Care and Public Health.* Aspen Publishers, Inc., 1998.

78. Institute of Medicine. *Medicare: A Strategy for Quality Assurance*. Vol. I. Lohr, K.N., ed. Washington, DC: National Academy Press, 1990.

2

Arthritis, Osteoporosis, and Chronic Back Conditions

Co-Lead Agencies: Centers for Disease Control and Prevention;
National Institutes of Health

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Goal

Prevent illness and disability related to arthritis and other rheumatic conditions, osteoporosis, and chronic back conditions.

Overview

The current and projected growth in the number of people aged 65 years and older in the United States has focused attention on preserving quality of life as well as length of life. Chief among the factors involving preserving quality of life are the prevention and treatment of musculoskeletal conditions—the major causes of disability in the United States. Among musculoskeletal conditions, arthritis and other rheumatic conditions, osteoporosis, and chronic back conditions have the greatest impact on public health and quality of life.

Demographic trends suggest that people will need to continue working at older ages (for example, beyond age 65 years), increasing the adverse social and economic consequences of the high rates of activity limitation and disability of older persons with these conditions. At the same time, effective public health interventions exist to reduce the burden of all three conditions. (See Focus Area 6: Disability and Secondary Conditions.)

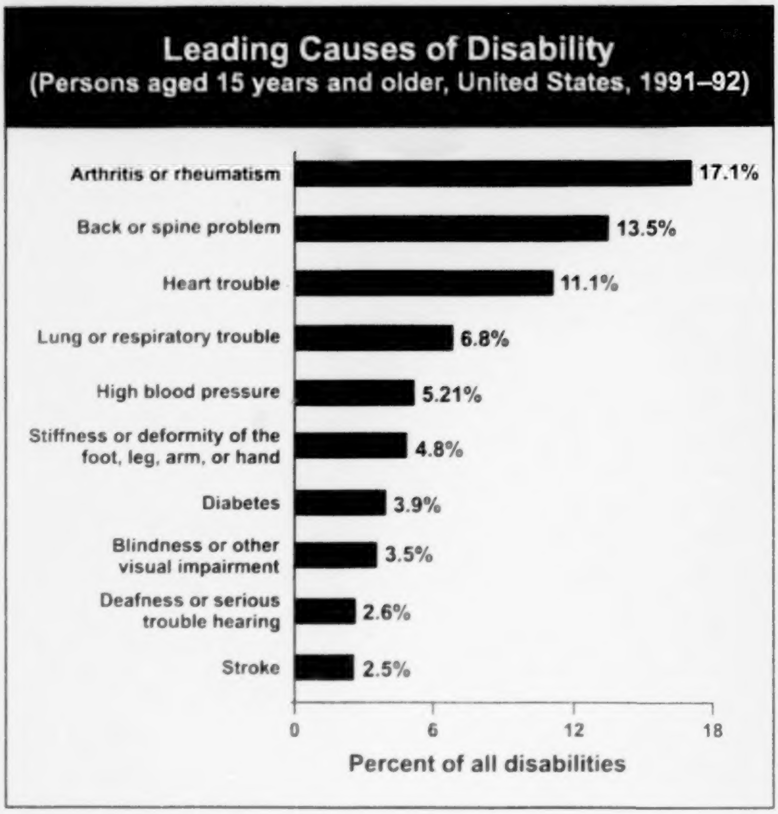
Issues and Trends

Arthritis

The various forms of arthritis affect more than 15 percent of the U.S. population—over 43 million persons—and more than 20 percent of the adult population, making arthritis one of the most common conditions in the United States.[1, 2, 3, 4]

The significant public health impact of arthritis is reflected in a variety of measures. First, arthritis is the leading cause of disability.[5] Arthritis limits the major activities (for example, working, housekeeping, school) of nearly 3 percent of the entire U.S. population (7 million persons), including nearly 1 out of every 5 persons with arthritis.[1, 2, 3] Arthritis trails only heart disease as a cause of work disability.[6] As a consequence, arthritis limits the independence of affected persons and disrupts the lives of family members and other care givers.

Second, health-related quality-of-life measures are consistently worse for persons with arthritis, whether the measure is healthy days in the past 30 days, days without severe pain, "ability days" (that is, days without activity limitations), or difficulty in performing personal care activities.[7, 8]



Leading Causes of Disability
(Persons aged 15 years and older, United States, 1991–92)

Source: CDC. Prevalence of disabilities and associated health conditions—United States, 1991–92. *Morbidity and Mortality Weekly Report* 43(40):730-731, 737-739, 1994.

Third, arthritis has a sizable economic impact. Arthritis is the source of at least 44 million visits to a health care provider, 744,000 hospitalizations, and 4 million days of hospital care per year.[4, 9] Estimated medical care costs for persons with arthritis were $15 billion, and total costs (medical care plus lost productivity) were $65 billion in 1992.[10] This latter amount is equal to 1.1 percent of the gross domestic product. Nearly 60 percent of persons with arthritis are in the working-aged population[1, 2, 3] and they have a low rate of labor force participation.[11]

Fourth, arthritis, like other chronic pain conditions, has an important negative effect on a person's mental health.[12, 13]

Fifth, although death is not a frequent outcome of arthritis, persons with certain forms of arthritis do have higher death rates than the general population. For example, the 2 million persons in the United States with rheumatoid arthritis are at greater risk of premature death from respiratory and infectious diseases than the overall U.S. population.[14]

A variety of demographic trends indicate that the impact of arthritis will only increase.[15] Given current population projections, arthritis will affect over 18 percent of all persons in the United States (nearly 60 million persons) in the year 2020 and will limit the major activities of nearly 4 percent (11.6 million).[1,2,3] Direct and indirect costs are expected to rise proportionately.

Osteoporosis

About 13 to 18 percent of women aged 50 years and older and 3 to 6 percent of men aged 50 years and older have osteoporosis, a reduction in bone mass or density that leads to deteriorated and fragile bones. These rates correspond to 4 million to 6 million women and 1 million to 2 million men in the United States who have osteoporosis.[16] Another 37 to 50 percent of women aged 50 years and older and 28 to 47 percent of men of the same age group have some degree of osteopenia, reduction in bone mass that is not as severe as osteoporosis.

The major health consequence of osteoporosis is an increased risk of fractures. Approximately 1.5 million fractures per year are attributed to osteoporosis.[17] One in three women and one in eight men aged 50 years and older will experience an osteoporotic-related fracture in their lifetime.[17] Health care costs for these fractures are estimated at $13.8 billion per year in 1996 dollars.[18]

The risk of any fracture increases with the presence of osteoporosis, but hip fractures represent the most serious impact in terms of health care costs and consequences for the individual. In 1994, there were 281,000 hospital discharges for hip fracture among people aged 45 years and older. Of these, 74,000, or 26 percent, were men.[19] In all, 1 out of 6 white women and 1 out of 17 white men will experience a hip fracture by the time they reach age 90 years.[19] Although the hip fracture rate among women seems relatively constant, the rate among men seems to be increasing over time.[20]

An average of 24 percent of hip fracture patients aged 50 years and older die in the year following fracture, with higher death rates among men than among women.[21] Also, hip fracture was more likely to lead to functional impairment than were other serious medical conditions, including heart attack, stroke, and cancer.[21] For example, half of all hip fracture patients will be unable to walk without assistance.[17]

Chronic Back Conditions

Chronic low back pain is described in different ways, such as the occurrence of back pain lasting for more than 7 to 12 weeks, back pain lasting beyond the expected period of healing, or frequently recurring back pain. Moreover, a wide range of outcome measures are used to describe chronic back problems, such as low back pain (LBP), activity limitation, impairment and disability. Compounding the problem is the lack of a single data source to track chronic back problems. Sources that have been used include workers compensation data, Occupational

Safety and Health Administration (OSHA) and Bureau of Labor Statistics records, and data from national health surveys.

Chronic back conditions are both common and debilitating. Back pain occurs in 15 to 45 percent of people each year,[22, 23, 24, 25, 26] and 70 to 85 percent of people have back pain some time in their life. In the United States, back pain is the most frequent cause of activity limitation in people under age 45 years,[27, 28] the second most frequent reason for physician visits, the fifth-ranking reason for hospitalization and the third most common reason for surgical procedures.[29]

Work-related risk factors, such as heavy physical work, lifting and forceful movements, awkward postures, and whole body vibration, are associated with low back disorders. Work-related risk factors account for 28 percent to 50 percent of the low back problem in an adult population.[30] A number of personal factors may be risk factors for low back pain. These include nonmodifiable factors, such as age and gender, some anthropometric characteristics (for example, height and body build), previous history of low back problems, and spinal abnormalities as well as modifiable factors, such as weight, physical fitness, smoking, some aspects of lumbar flexibility, trunk muscle strength, and hamstring elasticity. A history of previous low back problems is one of the most reliable predictors of subsequent back problems.[31]

Disparities

Arthritis is a leading health problem among all demographic groups, although significant and sometimes surprising disparities exist. Arthritis affects 50 percent of people aged 65 years and older. However, most people with arthritis are younger than age 65 years and of working age.[1, 2, 3] Arthritis also affects 285,000 children,[32] making it one of the more common chronic conditions of childhood. Arthritis is more common in women aged 18 years and older than in men and is the leading chronic condition and cause of activity limitation among women.[33, 34]

Whites and African Americans have similar rates of disease, but African Americans have greater rates of activity limitation.[1, 2, 3] For African Americans, arthritis is the third most common chronic condition and the leading cause of activity limitation.[35] For Hispanics and American Indians or Alaska Natives, arthritis is the second most common chronic condition and the second leading cause of activity limitation.[35] For Asians or Pacific Islanders, arthritis is the fourth most common chronic condition and the second leading cause of activity limitation.[35] For whites, arthritis is the most common chronic condition and the second leading cause of activity limitation.[35]

The rate of arthritis and its associated disabilities is higher among persons with low education and low income.[1, 2, 3] African Americans have lower rates of total joint replacement, a surgical procedure that is highly successful in reducing the impact of arthritis in persons with severe pain or disability, than do whites.[36]

Certain types of jobs, such as shipyard work, farm work, and occupations that place high knee-bending demands on the workers, increase the risks for osteoarthritis.[37, 38]

Osteoporosis is more common among women than men. The rates of disease increase markedly with increasing age. Rates are higher among non-Hispanic white Americans than among non-Hispanic African Americans or Mexican Americans.[10] White postmenopausal women are at highest risk of the disease.

The risk for chronic back pain increases with age. Although back pain appears to be equally common in men and women, impairment from back and spine conditions is more common in women.

Opportunities

The importance of physical activity for bone and joint health was highlighted in a 1996 report *Physical Activity and Health: A Report of the Surgeon General.*[39] Although behavioral interventions seem to have potential benefits, risk factors for the various types of arthritis need to be identified. Recreational or occupational joint injury has been identified as a risk factor for later osteoarthritis, and overweight is a risk factor for osteoarthritis of the knee and possibly the hip and hand.[40] Overweight appears to be a risk factor associated with the progression and severity of osteoarthritis.[40, 41]

Genetic research may soon identify persons at high risk for certain types of arthritis and thereby offer a better target for interventions. Current medical care offers considerable relief from pain and other symptoms for all types of arthritis. Available interventions often are not used, however, because of the popular belief that arthritis is part of normal aging, that a person can do nothing about it, and that it affects only old persons. But early diagnosis and aggressive treatment of rheumatoid arthritis with disease-modifying drugs, for example, appear to reduce its symptoms and related disability.[42, 43, 44, 45, 46, 47]

Educational and behavioral interventions also can relieve symptoms and reduce disability. Telephone contacts with clinicians and several land-based and water exercise programs have had beneficial outcomes.[48, 49, 50, 51] The Arthritis Self-Help Course, a 6-week, 2-hour per week educational intervention, has been shown to reduce pain up to 20 percent beyond what was achieved through conventional medical care.[52] The course has the additional benefit of reducing medical care costs by reducing the number of physician visits for arthritis.[52, 53] These and other effective interventions are currently underused, with some reaching less than 1 percent of target populations.[54] Countering myths about arthritis and applying available interventions can help reduce the impact of this health problem. (See Focus Area 6. Disability and Secondary Conditions.)

Interventions for osteoporosis and fractures can be designed to prevent the development of the disease, reduce further bone loss after the occurrence of the disease, and lessen the risk of fractures. Opportunities for primary prevention occur throughout the lifespan and include programs to promote exercise, avoid smoking, reduce excessive alcohol consumption, and improve nutrition, particularly the amount of calcium and vitamin D in the diet. (See Focus Area 19, Nutrition and Overweight.) These approaches can be important in achieving a high peak bone mass during adolescence to delay the onset of osteoporosis as bone mass declines with age. The approaches also can reduce the rate of bone loss later in life.

Women need to be particularly concerned about bone loss occurring at the time of menopause, when bone can be lost at the rate of 2 to 4 percent per year. Women should be counseled on methods to minimize their bone loss. Evidence indicates that older persons, even those who have had a fracture, can benefit from treatment to prevent further bone loss or restore some lost bone to decrease the risk of subsequent fractures.[44]

A wide range of interventions prevent or reduce low back problems. These interventions may include activities designed to reduce the physical demands of work activities by redesigning the task or to address the individual's specific needs, such as strength or endurance training or counseling for nutrition and lifestyle changes. Ergonomic interventions that are directed at changing the job or work environment have proven effective in reducing risk of occupational low back pain. (See Focus Area 20, Occupational Safety and Health.) Thus, it is reasonable to assume that ergonomic approaches would be effective in preventing chronic LBP as well. Even in a nonwork environment, the physical demands of the activity can be reduced by using ergonomic principles. Interventions involving training in proper lifting techniques, physical conditioning, and weight loss have been investigated in programmatically oriented studies. These have shown that workplace interventions may have an effect on low back disorders.[45] The overall benefits of exercise, nutrition and lifestyle changes on an individual's health and well-being would certainly justify efforts in this area. Also, interventions directed at improving strength and endurance may have an important impact on reducing activity limitations due to chronic low back pain.

Because national data systems will not be available in the first half of the decade for tracking progress, four subjects of interest concerning arthritis and osteoporosis are not covered in this focus area's objectives. Representing a research and data collection agenda for the coming decade, the topics involve appropriate management, patient education, provider counseling, and bone fracture prevention. The first addresses persons with systemic rheumatic disease who receive an early specific diagnosis and appropriate management plan. The second topic concerns hospitals, managed care organizations, and large group practices that provide effective, evidence-based arthritis education (including information about community and self-help resources) for patients to use as an integral part of the management of their condition. The third topic concerns health care provider counseling for persons at risk for or who have arthritis. Women aged 65 years and older, eligible under Medicare criteria, who have an initial bone density measurement are the focus of the fourth topic about bone fracture prevention.

Interim Progress Toward Year 2000 Objectives

The national health objectives for the year 2000 included two objectives for osteoporosis, one objective for chronic back conditions, and no objectives for arthritis. The objective of increasing the proportion of women of menopausal age who have been counseled about estrogen replacement therapy for the prevention of osteoporosis had no data subsequent to the 1994 baseline to chart progress. Annual hip fracture rates increased among people aged 65 years and older and rates of activity limitation due to chronic back conditions increased from the 1986-88 baseline.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Healthy People 2010—Summary of Objectives

Arthritis, Osteoporosis, and Chronic Back Conditions

Goal: Prevent illness and disability related to arthritis and other rheumatic conditions, osteoporosis, and chronic back conditions.

Number	Objective
Arthritis and Other Rheumatic Conditions	
2-1	Mean days without severe pain
2-2	Activity limitations due to arthritis
2-3	Personal care limitations
2-4	Help in coping
2-5	Employment rates
2-6	Racial differences in total knee replacement
2-7	Seeing a health care provider
2-8	Arthritis education
Osteoporosis	
2-9	Cases of osteoporosis
2-10	Hospitalization for vertebral fracture
Chronic Back Conditions	
2-11	Activity limitations due to chronic back conditions

Arthritis and Other Rheumatic Conditions

2-1. (Developmental) Increase the mean number of days without severe pain among adults who have chronic joint symptoms.

Potential data sources: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP; National Health Interview Survey (NHIS), CDC, NCHS.

Public health researchers measure days without severe pain by asking "During the past 30 days, for about how many days did pain make it hard for you to do your usual activities, such as self-care, work, or recreation?" Pain is the most important symptom among persons with arthritis, resulting in the widespread use of conventional prescription and nonprescription medications, surgical interventions, and alternative medical treatments. A measure of pain-free days provides a pertinent and understandable performance-based approach for tracking this key health-related quality of life (HRQOL) determinant for persons with arthritis. Increasing days without severe pain is a feasible target, given more widespread use of available interventions (medical, educational, exercise, nutritional) that are likely to affect this measure. Health surveys variously ask about chronic joint symptoms or arthritis in addressing arthritis and other rheumatic conditions, which is why both terms are used for these objectives.

2-2. Reduce the proportion of adults with chronic joint symptoms who experience a limitation in activity due to arthritis.

Target: 21 percent.

Baseline: 27 percent of adults aged 18 years and older with chronic joint symptoms experienced a limitation in activity due to arthritis in 1997. (Age adjusted to the year 2000 standard population.)

Target setting method: Better than the best.

Data sources: National Health Interview Survey (NHIS), CDC, NCHS; National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 18 Years and Older With Chronic Joint Symptoms, 1997	**Experienced Limitation in Activity Due to Arthritis** Percent
TOTAL	27
Race and ethnicity	
American Indian or Alaska Native	27
Asian or Pacific Islander	18
Asian	16
Native Hawaiian and other Pacific Islander	DSU
Black or African American	32
White	27
Hispanic or Latino	28
Not Hispanic or Latino	27
Black or African American	32
White	27
Gender	
Female	31
Male	22
Family income level	
Poor	36
Near poor	30
Middle/high income	24
Education level (aged 25 years and older)	
Less than high school	34
High school graduate	32
At least some college	26

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

2-3. Reduce the proportion of all adults with chronic joint symptoms who have difficulty in performing two or more personal care activities, thereby preserving independence.

Target: 1.4 percent.

Baseline: 2.0 percent of adults aged 18 years and older with chronic joint symptoms experienced difficulty performing two or more personal care activities in 1997. (Age adjusted to the year 2000 standard population.)

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older With Chronic Joint Symptoms, 1997	**Personal Care Limitations** Percent
TOTAL	2.0
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	3.6
White	1.8
Hispanic or Latino	3.5
Not Hispanic or Latino	1.9
Black or African American	3.4
White	1.7
Gender	
Female	2.2
Male	1.6
Family income level	
Poor	5.4
Near poor	2.4
Middle/high income	0.9

Adults Aged 18 Years and Older With Chronic Joint Symptoms, 1997	**Personal Care Limitations** Percent
Education level (aged 25 years and older)	
Less than high school	3.4
High school graduate	2.2
At least some college	1.4

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.

Arthritis and other rheumatic conditions affect quality of life in many ways and are key items of personal interest to individuals with these conditions.[7, 8, 57, 58, 59, 60, 61] From a public health perspective, validated measures of HRQOL are essential for monitoring the impact of clinical and public health interventions.

Activity limitation occurs frequently among persons with arthritis and is an important functional element that can compromise independence. Activity limitation affects 27 percent of all persons who have arthritis,[1] making it the number one cause of activity limitations in the United States.[5] The activity limitations of arthritis also indirectly affect health and independence by decreasing physical activity, increasing weight, and placing persons at higher risk for all the adverse outcomes of those risk factors.

As the leading cause of disability, arthritis is a leading cause of difficulty in performing personal care activities and thereby a leading cause of loss of independence. Therefore, maintaining independence, especially in personal care, is important for persons with arthritis.

2-4. (Developmental) Increase the proportion of adults aged 18 years and older with arthritis who seek help in coping if they experience personal and emotional problems.

Potential data sources: National Health Interview Survey (NHIS), CDC, NCHS; Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

Coping difficulties, depression, anxiety, and low self-efficacy are recognized as major personal and emotional problems among persons with arthritis.[12] These problems are especially frequent among persons who experience physical pain. Because arthritis is a leading cause of chronic pain, monitoring these mental health outcomes can help assess the success of applied interventions.[13]

2-5. Increase the employment rate among adults with arthritis in the working-age population.

Target: 78 percent.

Baseline: 67 percent of adults aged 18 to 64 years with arthritis were employed in the past week in 1997. (Age adjusted to the year 2000 standard population.)

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 to 64 Years With Arthritis, 1997	**Employed in Past Week** Percent
TOTAL	67
Race and ethnicity	
American Indian or Alaska Native	46
Asian or Pacific Islander	56
Asian	54
Native Hawaiian and other Pacific Islander	DSU
Black or African American	52
White	69
Hispanic or Latino	60
Not Hispanic or Latino	67
Black or African American	53
White	70
Gender	
Female	60
Male	74
Family income level	
Poor	39
Near poor	54
Middle/high income	77
Education level (aged 25 to 64 years)	
Less than high school	47
High school graduate	65
At least some college	78

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Labor force participation rates (which parallel employment rates) for all persons of work age (18 to 64 years) in 1994 were 70.6 percent for females and 86.9 percent for males.[11] Rates for persons with arthritis, however, are far below these numbers.[11] A part of this low rate may be increased through early diagnosis and appropriate management, improved self-management, and improved job retention efforts. Raising this low rate will help foster independence for affected persons and reduce the demands on families and society. Reducing demands on families and society is particularly important as demographic changes lead to fewer workers for each nonworker.

2-6. (Developmental) Eliminate racial disparities in the rate of total knee replacements.

Potential data sources: Medicare data, HCFA; National Hospital Discharge Survey (NHDS), CDC, NCHS; Hospital Cost and Utilization Project (HCUP), AHRQ.

Studies have shown that African Americans have much lower rates of total knee replacement than whites, even when adjusted for age, gender, and insurance coverage.[36] The reasons for this difference are unclear, but the effect is that many persons are not getting needed interventions to reduce pain and disability. This is one component of a more widespread problem of racial differences in medical care that is difficult to explain by financial or access-to-care issues.

2-7. (Developmental) Increase the proportion of adults who have seen a health care provider for their chronic joint symptoms.

Potential data source: National Health Interview Survey (NHIS) CDC, NCHS.

Studies using the 1989 National Health Interview Survey have shown that 16 percent of adults aged 18 years and older have not seen a doctor for their arthritis.[62] Appropriate medical management, patient and provider education, improved self-management, and physical activity—all encouraged by providers—can reduce arthritis pain and disability. Increasing the percentage of persons who seek a diagnosis and treatment from a health care provider for their chronic joint symptoms is an objective amenable to public awareness campaigns to counter the myths that arthritis is part of normal aging and nothing can be done for it. This objective is especially important for the working-aged population, the upper age limit of which is likely to rise as the overall population ages through the 2030s.

2-8. (Developmental) Increase the proportion of persons with arthritis who have had effective, evidence-based arthritis education as an integral part of the management of their condition.

Potential data sources: National Health Interview Survey (NHIS), CDC, NCHS; Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

Existing evidence-based education interventions, such as the Arthritis Self-Help Course, are effective in reducing arthritis pain and reducing physician visits for arthritis.[52] These beneficial interventions, which include information about community and self-help resources, are estimated to reach less than 1 percent of the population with arthritis.[54] Expanding the dissemination of the benefits of interventions currently available offers the opportunity of quickly improving the health of all persons with arthritis and reducing the impact of arthritis nationally. Education efforts should be provided in a culturally and linguistically competent manner.

Osteoporosis

2-9. Reduce the overall number of cases of osteoporosis.

Target: 8 percent of adults.

Baseline: 10 percent of adults aged 50 years and older had osteoporosis as measured by low total femur bone mineral density (BMD) in 1988-94. (Age adjusted to the year 2000 standard population.)

Target setting method: 20 percent improvement.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 50 Years and Older, 1988–94	Osteoporosis as Measured by Low Bone Mineral Density Percent
TOTAL	10
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC

Adults Aged 50 Years and Older, 1988–94	Osteoporosis as Measured by Low Bone Mineral Density Percent
Black or African American	7
White	10
Hispanic or Latino	DSU
Mexican American	10
Not Hispanic or Latino	DNA
Black or African American	7
White	10
Gender	
Female	16
Male	3
Education level	
Less than high school	11
High school graduate	11
At least some college	9

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

BMD has been identified as one of the primary predictive factors for osteoporosis-related fractures.[63, 64, 65] Osteoporosis is defined as a BMD value that is more than 2.5 standard deviations below that of an average young adult.[66]

The proportion of adults 50 years and older with osteoporosis in the total femur region is 10 percent (16 percent in women and 3 percent in men). Osteoporosis occurs in nonwhite women and in men, although the rates of disease are not as high as the rates found among white women. These estimates are based on the total femur; estimates based on a different skeletal site (or combination of sites) may differ. For example, the proportion of white women with osteoporosis in Olmsted County, Minnesota, was established to be approximately 16 to 17 percent at the femur, lumbar spine, or wrist when each site was considered separately. However, 30 percent of women had osteoporosis in at least one of the three sites.[67]

Osteoporosis is a major risk factor for hip fracture. Virtually all persons with a hip fracture are hospitalized for treatment.[21] Two-thirds of persons who fracture a hip do not return to their prefracture level of functioning. Health care expenditures for hip fractures in 1995 have been estimated at $8.7 billion.[18] Interventions that reduce the rate of osteoporosis should have a marked impact on the rate of hip fractures. Estimates indicate that osteoporosis contributes to 90 percent of hip fractures in women and 80 percent of hip fractures in men.[illegible] Increasing BMD by 5 percent may decrease the risk of fractures by 25 percent.[illegible]

Although osteoporosis increases the risk of fractures, most hip fractures result from falls.[illegible] Some risk factors associated with falls may be amenable to interventions. These risk factors include impaired vision, use of long-acting psychotropic drugs, physical inactivity, muscle weakness, and poor health.[illegible] (See Focus Area 15. Injury and Violence Prevention.)

2-10. Reduce the proportion of adults who are hospitalized for vertebral fractures associated with osteoporosis.

Target: 11.6 hospitalization per 10,000 population aged 65 years and older.

Baseline: 14.5 per 10,000 adults aged 65 years and older were hospitalized for vertebral fractures associated with osteoporosis in 1997. (Age adjusted to the year 2000 standard population.)

Target setting method: 20 percent improvement.

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

Adults Aged 65 Years and Older, 1997	**Hospitalizations for Vertebral Fractures Associated With Osteoporosis** Rate per 10,000
TOTAL	14.5
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	6.5
White	11.1
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU

Adults Aged 65 Years and Older, 1997	Hospitalizations for Vertebral Fractures Associated With Osteoporosis Rate per 10,000
Gender	
Female	15.2
Male	13.0
Age	
65 to 74 years	5.5
75 to 84 years	16.5
85 years and older	47.6

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Vertebral fractures are the most common fracture due to osteoporosis.[70] About 30 to 50 percent of women and 20 to 30 percent of men will experience vertebral fractures in their lifetime.[70] The overall number of cases of these fractures rises rapidly with increasing age. Among white women, the rate rises from 6 percent among those aged 50 to 59 years to about 75 percent among those aged 90 years and older.[71] Most of these fractures cause little difficulty and go unrecognized. However, 33 percent of the fractures will be diagnosed clinically, 8 percent will require hospitalization,[72] and about 2 percent will require long-term nursing care.[73]

The most common symptom of vertebral fractures is back pain, which is reported in about half of the cases. People with these fractures are more likely to have difficulty performing activities of daily living, such as bending, reaching above the head, and walking. Changes in the outward appearance of people experiencing these fractures is a loss of height and the development of a humped back.[70]

Interventions that reduce the number of persons with osteoporosis should reduce the rates of vertebral fractures. Falls associated with fractures at other sites do not play a prominent role in these fractures. Normal daily activities can place sufficient stress on the vertebra to cause fractures.[71]

For discussion of calcium and vitamin D, see Focus Area 19. Nutrition and Overweight.

Chronic Back Conditions

2-11. Reduce activity limitation due to chronic back conditions.

Target: 25 adults per 1,000 population aged 18 years and older.

Baseline: 32 adults per 1,000 population aged 18 years and older experienced activity limitations due to chronic back conditions in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1997	Experienced Limitation of Activity Due to Chronic Back Conditions Rate per 1,000
TOTAL	32
Race and ethnicity	
American Indian or Alaska Native	68
Asian or Pacific Islander	18
Asian	15
Native Hawaiian and other Pacific Islander	DSU
Black or African American	36
White	31
Hispanic or Latino	28
Not Hispanic or Latino	32
Black or African American	36
White	32
Gender	
Female	32
Male	31
Family income level	
Poor	77
Near poor	53
Middle/high income	24

Adults Aged 18 Years and Older, 1997	**Experienced Limitation of Activity Due to Chronic Back Conditions** Rate per 1,000
Education level (aged 25 years and older)	
Less than high school	54
High school graduate	35
At least some college	28

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Persons who are overweight and persons who frequently bend over or lift heavy objects are at risk for low back injuries.[74] Occupations that require repetitive lifting, particularly in a forward bent and twisted position, place employees at especially high risk. Other risk factors for low back injury include exposure to vibration produced by vehicles or industrial machinery, prolonged vehicle driving, and certain sports activities.[74, 20, 26, 75, 76] Predictors of back problems may include diminished lumbar flexibility, trunk muscle strength, and hamstring elasticity.[77] Osteoporosis increases the risk of vertebral compression, which may account for the increase in reported low back pain in older females.[78, 79] Increased age also is associated with back pain.[80] In addition, persons who have experienced back problems in the past are at increased risk for future injury.[80, 81]

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-3.	Counseling about health behaviors

3. Cancer

3-10.	Provider counseling about preventive measures

6. Disability and Secondary Conditions

6-4.	Social participation among adults with disabilities
6-5.	Sufficient emotional support among adults with disabilities
6-8.	Employment parity

7. Education and Community-Based Programs

7-5.	Worksite health promotion programs
7-6.	Participation in employer-sponsored health promotion activities
7-10.	Community health promotion programs
7-12.	Older adult participation in community health promotion activities

15. Injury and Violence Prevention

15-28. Hip fractures

19. Nutrition and Overweight

19-1. Healthy weight in adults

19-2. Obesity in adults

19-11. Calcium intake

19-16. Worksite promotion of nutrition education and weight management

19-17. Nutrition counseling for medical conditions

20. Occupational Safety and Health

20-2. Work-related injuries

20-3. Overexertion or repetitive motion

22. Physical Activity and Fitness

22-1. No leisure-time physical extivity

22-2. Moderate physical activity

22-3. Vigorous physical activity

22-4. Muscular strength and endurance

22-5. Flexibility

22-8. Physical education requirements in schools

22-10. Physical activity in physical education class

27. Tobacco Use

27-1. Adult tobacco use

27-5. Smoking cessation by adults

27-7. Smoking cessation by adolescents

27-17. Adolescent disapproval of smoking

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Activity limitations: Problems in a person's performance of everyday functions such as communication, self-care, mobility, learning, and behavior.

Arthritis: Shorthand for arthritis and other rheumatic conditions.

Arthritis and other rheumatic conditions: More than 100 conditions (or diseases or problems) that primarily affect the joints, muscles, fascia, tendons, bursa, ligaments, and other connective tissues of the body.

Bone mineral density (BMD): Measurement used to determine the presence of osteoporosis.

Chronic back conditions: Low back pain and other conditions affecting only the back.

Chronic joint symptoms: Pain, aching, stiffness, or swelling in or around a joint that was present on most days for at least 1 month in the past 12 months.

Disability: The general term used to represent the interactions between individuals with a health condition and barriers in their environment. The term disability is operationalized as self-reported activity limitations or use of assistive devices or equipment related to an activity limitation.

Musculoskeletal conditions: Problems that affect the skeleton, joints, muscles, and connective tissues of the body.

Osteoarthritis: A slowly progressive, degenerative joint disease that results from the breakdown of

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cartilage and leads to pain and stiffness; usually affects the knees, hips, and hands; the most common form of arthritis.

Osteoporosis: Bone disease characterized by a reduction of bone mass and a deterioration of the microarchitecture of the bone leading to bone fragility.

Osteopenia: A condition similar to osteoporosis except the reduction in bone mass is not as severe.

Personal care activities: Eating, bathing, dressing, or getting around inside the home, including getting in or out of bed or chairs and using the toilet (including getting to the toilet).

Rheumatoid arthritis: A chronic, inflammatory disease of the body that produces its most prominent manifestations in joints, often leading to joint pain, stiffness, and deformity.

Work disability: Limited in the amount or kind of work; unable to work.

References

1. Centers for Disease Control and Prevention (CDC). Arthritis prevalence and activity limitations—United States, 1990. *Morbidity and Mortality Weekly Report* 43(24):433-438, 1994.

2. Lawrence, R.C.; Helmick, C.G.; Arnett, F.C.; et al. Estimates of the prevalence of arthritis and selected musculoskeletal disorders in the United States. *Arthritis & Rheumatism* 41(5):778-799, 1998.

3. Helmick, C.G.; Lawrence, R.C.; Pollard, R.A., et al. Arthritis and other rheumatic conditions: Who is affected now, who will be affected later? *National Arthritis Data Workgroup Arthritis Care and Research* 8:203-211, 1995.

4. CDC. Impact of arthritis and other rheumatic conditions on the health-care system. *Morbidity and Mortality Weekly Report* 48(17):349-353, 1999.

5. CDC. Current Trends: Prevalence of disabilities and associated health conditions—United States, 1991-1992. *Morbidity and Mortality Weekly Report* 43(40):730-731, 737-739, 1994.

6. LaPlante, M.P. Data on Disability from the National Health Interview Survey, 1983-1985. Washington, DC: U.S. National Institute on Disability and Rehabilitation Research, U.S. Department of Education, 1988.

7. CDC. Health-related quality of life and activity limitation—8 states, 1995. *Morbidity and Mortality Weekly Report* 47(67):134-140, 1998.

8. CDC. State differences in reported healthy days among adults—United States, 1993-1996. *Morbidity and Mortality Weekly Report* 47(12):239-243, 1998.

9. CDC. *Targeting Arthritis: The Nation's Leading Cause of Disability. At-a-Glance, 1998.* Atlanta, GA: Technical Information and Editorial Services Branch, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 1998.

10. Yelin, E., and Callahan, L.F. for the National Arthritis Data Workgroup. The economic cost and social and psychological impact of musculoskeletal conditions. *Arthritis & Rheumatism* 38(10):1351-1362, 1995.

11. Trupin, L.; Sebesta, D.S.; Yelin, E.; and LaPlante, M.P. Trends in Laborforce Participation Among Persons With Disability, 1983-1994. Disability Statistics Report 10. Washington, DC: U.S. Department of Education, National Institute on Disability and Rehabilitation Research, 1997.

12. Frank, R.G., and Hagglund, K.J. Mood disorders. In: Wegener, S.T. (ed.). *Clinical Care in the Rheumatic Diseases.* Atlanta, GA: American College of Rheumatology, 1996, 125-130.

13. Bradley, L.A. Wegener, S.T.; Belza, B.L.; and Gall, E.P. Pain management interventions for patients with rheumatic diseases. In: Melvin, J., and Jensen, G. (eds.). *Rheumatologic Rehabilitation Series Volume I: Assessment and Management.* Rockville, MD: American Occupational Therapy Association, 1998, 259-278.

14. Wolf, F. The natural history of rheumatoid arthritis. *Journal of Rheumathology.* 23(suppl. 44):13-22, 1996.

15. Boult, C.; Altmann, M.; Gilbertson, D.; Yu, C.; and Kane, R.L. Decreasing disability in the 21st century: The future effects of controlling six fatal and non-fatal conditions. *American Journal of Public Health* 86:1388-1393, 1996.

16. Looker, A.C.; Orwoll, E.S.; Johnston, C.C.; et al. Prevalence of low femoral bone density in older U.S. adults from NHANES III. *Journal of Bone and Mineral*

Research 12(11):1761-1768, 1997.

17. Riggs, B.L., and Melton, III, L.J. The worldwide problem of osteoporosis: Insights afforded by epidemiology. *Bone* 17(5 suppl):505S-511S, 1995.

18. Ray, N.F.; Chan, J.K.; Thamer, M.; and Melton, III, L.J. Medical expenditures for the treatment of osteoporotic fractures in the United States in 1995: Report from the National Osteoporosis Foundation. *Journal of Bone and Mineral Research* 12(1):24-35, 1997.

19. Melton, III, L.J; Chrischilles, E.A.; Cooper, C.; et al. How many women have osteoporosis? *Journal of Bone and Mineral Research* 7:1005-1010, 1992.

20. Bacon, W.E. Secular trends in hip fracture occurrence and survival: Age and sex differences. *Journal of Aging Health* 8(4):538-553, 1996.

21. U.S. Congress, Office of Technology Assessment. *Hip Fracture Outcomes in People Age 50 and Over—Background Paper*. OTA-BP-H-120. Washington, DC: U.S. Government Printing Office, July 1994.

22. Anderson, G.B.J. The epidemology of spinal disorders. In: Frymoyer, J.W., (ed). *The Adult Spine: Principles and Practice, 2nd ed.* Raven, Philadelphia, PA: LIPPENCOTT-Raven, 1997.

23. Biering-Sorensen, F. Physical measurements as risk indicators for low-back trouble over a one year period. *Spine* 9:106-119, 1984.

24. Frymoyer, J.W.; Pope, M.H.; Clements, J.H.; et al. Risk factors in low-back pain: An epidemiological survey. *Journal of Bone and Joint Surgery* 65(2):213-218, 1983.

25. Frymoyer, J.W. Back pain and sciatica. *New England Journal of Medicine* 318(5):291-300, 1988.

26. Svensson, H.O., and Anderson, G.B.J. Low-back pain in 40- to 47-year old men: Work history and work environment factors. *Spine* 8(3):272-276, 1983.

27. Anderson, G.B. Epidemiological aspects on low back pain in industry. *Spine* 6(1):53-60, 1981.

28. Kelsey, J.L.; White, A.A.; Pastides, H.; et al. The impact of musculoskeletal disorders on the population of the United States. *Journal of Bone and Joint Surgery* 61(7):959-964, 1979.

29. Praemer, A.; Furner, S.; and Rice, D.P. Musculoskeletal conditions in the United States. Park Ridge, IL: American Academy of Orthoscopic Surgery, 1992.

30. Wegman, D.H., and Fine, L.J. Occupational and Environmental Medicine. *Journal of the American Medical Association* 275(23):1831-1832, 1996.

31. Shelerud, R. Epidemiology of Occupational Low Back Pain. In: *Occupational Medicine: State of the Art Reviews*. Philadelphia, PA: Hanley and Belfus 1998, 1-22.

32. CDC, NCCDPHP, DACH, HCASB, Atlanta, GA, unpublished data.

33. CDC. Prevalence and impact of arthritis among women. United States, 1989-1991. *Morbidity and Mortality Weekly Report* 44(17):329-334, 517-518, 1995.

34. Callahan, L.F.; Rao, J.; and Boutaugh, M. Arthritis and women's health: Prevalence, impact, and prevention. *American Journal of Preventive Medicine* 12(5):401-409, 1996.

35. CDC. Prevalence and impact of arthritis by race and ethnicity—United States, 1989-1991. *Morbidity and Mortality Weekly Report* 45(18):373-378, 1996.

36. Wilson, M.G.; May, D.S.; and Kelly, J.J. Racial differences in the use of total knee arthroplasty for osteoarthritis among older Americans. *Ethnicity & Disease* 4(1):57-67, 1994.

37. Hochberg, J.C. Osteoarthritis. In: Silman, A.J., and Hochberg, J.C. (eds.). *Epidemiology of the Rheumatic Diseases*. Oxford: Oxford University Press, 1993, 257-288.

38. Felson, D.T. Epidemiology of hip and knee osteoarthritis. *Epidemiologic Reviews* 10:1-28, 1988.

39. U.S. Department of Health and Human Services (HHS). *Physical Activity and Health: A Report of the Surgeon General*. Atlanta, GA: HHS, CDC, 1996.

40. Felson, D.T., and Zhang, Y. Personal Communication. An update on the epidemiology of knee and hip osteoarthritis with a view to prevention. August 1998.

41. Felson, D.T.; Zhang, Y.; Anthony, J.M.; et al. Weight loss reduces the risk for symptomatic knee osteoarthritis in women. The Framingham Study. *Annals of Internal Medicine* 116(7):535-539, 1992.

42. Weinblatt, M.E. Rheumatoid arthritis: Treat now, not later! (Editorial). *Annals of Internal Medicine* 124:773-774, 1996.

43. Van der Heide, A.; Jacobs, J.W.; Bijlsma, J.W.; et al. The effectiveness of early treatment with "second-

line" antirheumatic drugs. A randomized, controlled trial. *Annals of Internal Medicine* 124(8):699-707, 1996.

44. Fries, J.F.; Williams, C.A.; Morrfeld, D.; Singh, G.; and Sibley, J. Reduction in long-term disability in patients with rheumatoid arthritis by disease-modifying antirheumatic drug-based treatment strategies. *Arthritis & Rheumatism* 39:616-622, 1996.

45. Egsmose, C.; Lund, B.; Borg, G.; et al. Patients with rheumatoid arthritis benefit from early 2nd line therapy: 5-year follow up of a prospective double blind placebo controlled study. *Journal of Rheumatology* 22:2208-2213, 1995.

46. Kirwan, J.R. The Arthritis and Rheumatism Council, Low-Dose Glucocorticoid Study Group. The effect of glucocorticoids on joint destruction in rheumatoid arthritis. *New England Journal of Medicine* 333(3):142-146, 1995.

47. Emery, P., and Salmon, M. Early rheumatoid arthritis: Time to aim for remission? *Annals of Rheumatic Diseases* 54:944-947, 1995.

48. Maisiak, R.; Austin, J.; and Heck, L. Health outcomes of two telephone interventions for patients with rheumatoid arthritis or osteoarthritis. *Arthritis & Rheumatism* 39:1391-1399, 1996.

49. Minor, M.A. Arthritis and exercise: The times they are a-changin' (Editorial). *Arthritis Care and Research* 9:9-81, 1996.

50. Minor, M.A., and Kay, D.R. Arthritis. In: *Exercise Management for Persons With Chronic Diseases and Disabilities*. Champaign, IL: Human Kinetics, 1997.

51. Puett, D.W., and Griffin, M.R. Published trials of nonmedicinal and noninvasive therapies for hip and knee osteoarthritis. *Annals of Internal Medicine* 121(2):133-140, 1994.

52. Lorig, K.R.; Mazonson, P.D.; and Holman, H.R. Evidence suggesting that health education for self-management in patients with chronic arthritis has sustained health benefits while reducing health care costs. *Arthritis & Rheumatism* 36(4):439-446, 1993.

53. Kruger, J.M.S.; Helmick, C.G.; Callahan, L.F.; and Haddix, A.C. Cost-effectiveness of the Arthritis Self-Help Course. *Archives of Internal Medicine*, 1998.

54. Boutaugh, M. Personal communication. Arthritis Foundation. August 1999.

55. Seeman, E. Introduction. *American Journal of Medicine* 103(Suppl 2a):1s-2s, 1997.

56. Violinn, E. Do workplace interventions prevent low-back disorders? If so: Why?: a methodological commentary. *Erognomics* 42(1):258-272, 1999.

57. Hennessy, C.H.; Moriarty, D.G.; Zack, M.M.; Scherr, P.A.; and Brackbill, R. Measuring health-related quality of life for public health surveillance. *Public Health Reports* 109(5):665-672, 1994.

58. CDC. Quality of life as a new public health measure—Behavioral Risk Factor Surveillance System, 1993. *Morbidity and Mortality Weekly Report* 43(20):375-380, 1994.

59. CDC. Health-related quality-of-life measures—United States, 1993. *Morbidity and Mortality Weekly Report* 44(11):195-200, 1995.

60. Newschaffer, C.J. *Validation of BRFSS HRQOL Measures in a Statewide Sample*. Atlanta, GA: HHS, Public Health Service, CDC, National Center for Chronic Disease Prevention and Health Promotion, 1998.

61. Verbrugge, L.M.; Merrill, S.S.; and Liu, X. Measuring Disability With Parsimony. *Disability Rehabilitation* 21(5-6):295-306, 1999.

62. Rao, J.K.; Callahan, L.F.; and Helmick, C.G. Characteristics of persons with self-reported arthritis and other rheumatic conditions who do not see a doctor. *Journal of Rheumatology* 24:169-173, 1997.

63. Cummings, S.R.; Black, D.M.; Nevitt, M.C.; et al., for the Study of Osteoporotic Fracture Group. Bone density at various sites for prediction of hip fractures. *Lancet* 341(8837):72-75, 1993.

64. Melton, III, L.J.; Atkinson, E.J.; O'Fallon, W.M.; Wahner, H.W.; and Riggs, B.L. Long-term fracture prediction by bone mineral assessed at different skeletal sites. *Journal of Bone and Mineral Research* 8(10):1227-1233, 1993.

65. Melton, III, L.J.; Thamer, M.; Ray, N.F.; et al. Fractures attributable to osteoporosis: Report from the National Osteoporosis Foundation. *Journal of Bone and Mineral Research* 12(1):16-23, 1997.

66. World Health Organization (WHO). *Assessment of Fracture Risk and Its Application to Screening for Postmenopausal Osteoporosis*. Technical Report Series No. 843. Geneva, Switzerland: the Organization, 1994.

67. Melton, III, L.J. How many women have osteoporosis now? *Journal*

of Bone and Mineral Research 10(2):175-177, 1995.

68. Lips, P. Prevention of hip fractures: Drug therapy. *Bone* 18(3 suppl.):159S-163S, 1996.

69. Cummings, S.R. Treatable and untreatable risk factors for hip fracture. *Bone* 18:165s-176s, 1996.

70. Ross P.D. Clinical consequences of vertebral fractures. *American Journal of Medicine* 103:30S-43S, 1997.

71. Melton, III, L.J.; Kan, S.H.; Frye, M.A.; Wahner, H.W.; O'Fallon, W.M.; and Riggs, B.L. Epidemiology of vertebral fractures in women. *American Journal of Epidemiology* 129:1000-1011, 1989.

72. Jacobsen, S.J.; Cooper, C.; Gottlieb, M.S.; Goldberg, J.; Yahnke, D.P.; and Melton III, L.J. Hospitalization with vertebral fracture among the aged: a national population-based study 1986-1989. *Epidemiology* 3(6):515-518, 1992.

73. Chrischilles, E.A.; Butler, C.D.; Davis, S.C.; and Wallace, R.B. A model of lifetime osteoporosis impact. *Archives of Internal Medicine* 151(10):2026-2032, 1991.

74. Schuchmann, J.A. Low back pain: A comprehensive approach. *Comprehensive Therapy* 14(1):14-18, 1988.

75. Kelsey, J.L.; Githens, P.B.; White, III, A.A.; et al. An epidemiologic study of lifting and twisting on the job and risk for acute, prolapsed lumbar vertebral disc. *Journal of Orthopaedic Research* 2(1):61-66, 1984.

76. Kelsey, J.L.; Githens, P.B.; O'Conner, T.; et al. Acute prolapsed lumbar intervertebral disc. An epidemiologic study with special reference to driving automobiles and cigarette smoking. *Spine* 9(6):608-613, 1984.

77. Parnianpour, M.; Bejjani, F.J.; Pavlidis, L. Worker training: The fallacy of single, correct lifting technique. *Ergonomics* 30(2):331-334, 1987.

78. Porter, R.W.; Hibbert, C.; Wellman, P. Backache and the lumbar spinal canal. *Spine* 5(2):99-105, 1980.

79. Buchanan, J.R.; Myers, C.; Greer, III, R.B.; et al. Assessment of the risk of vertebral fracture in menopausal women. *Journal of Bone and Joint Surgery* 69(2):212-218, 1987.

80. Chaffin, D.B., and Park, K.S. A longitudinal study of low back pain as associated with occupational weight lifting factors. *American Industrial Hygiene Association Journal* 34(12):513-525, 1973.

81. Venning, P.J.; Walter, S.D.; and Stitt, L.W. Personal and job-related factors as determinants of incidence of back injuries among nursing personnel. *Journal of Occupational Medicine* 29(10):820-825, 1987.

3

Cancer

Co-Lead Agencies: Centers for Disease Control and Prevention;
National Institutes of Health

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Goal

Reduce the number of new cancer cases as well as the illness, disability, and death caused by cancer.

Overview

Cancer is the second leading cause of death in the United States. During 1999, an estimated 1,221,800 persons in the United States were diagnosed with cancer; 563,100 persons were expected to die from cancer.[1] These estimates did not include most skin cancers, and new cases of skin cancer are estimated to exceed 1 million per year. One-half of new cases of cancer occur in people aged 65 years and over.[2]

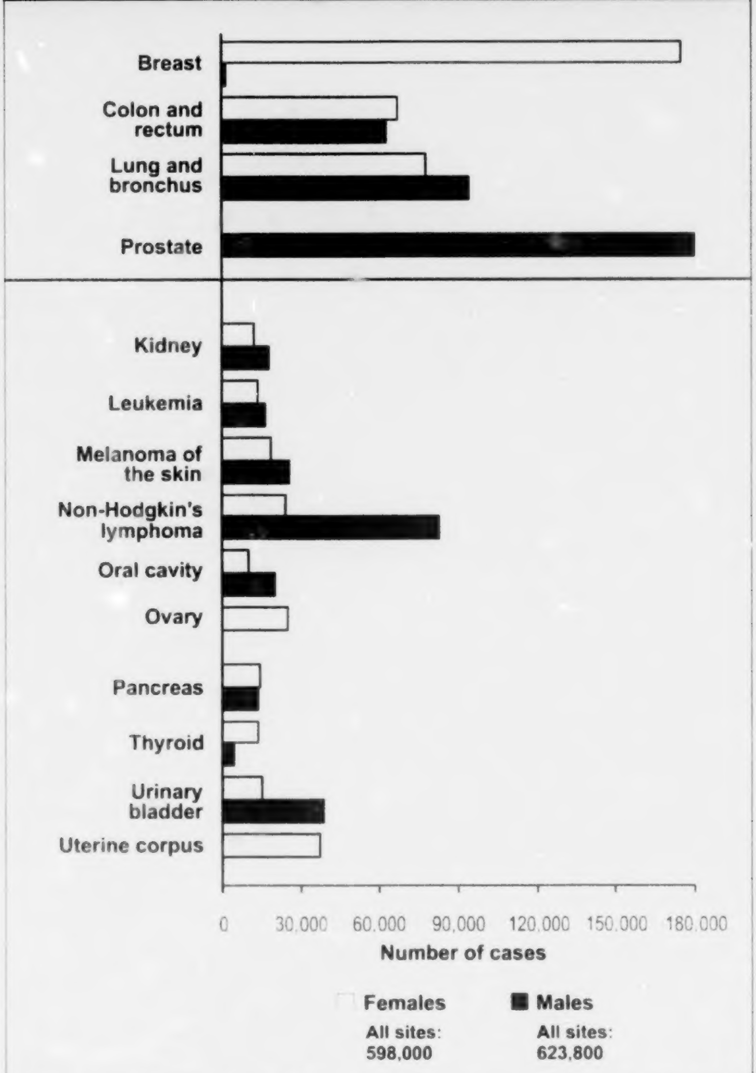
About 491,400 Americans who get cancer in a given year, or 4 in 10 patients, are expected to be alive 5 years after diagnosis. When adjusted for normal life expectancy (accounting for factors such as dying of heart disease, injuries, and diseases of old age), a "relative" 5-year survival rate of 60 percent is seen for all cancers.[1] This rate means that the chance of a person recently diagnosed with cancer being alive in 5 years is 60 percent of the chance of someone not diagnosed with cancer. Five-year relative survival rates commonly are used to monitor progress in the early detection and treatment of cancer and include persons who are living 5 years after diagnosis, whether in remission, disease free, or under treatment.

Issues and Trends

Cancer death rates for all sites combined decreased an average of 0.6 percent per year from 1990 to 1996.[3] This decrease occurred after rates had increased by 0.4 percent per year from 1973 to 1990.[4] Death rates for male lung, female breast, prostate, and colorectal cancers decreased significantly during the 1990-96 period.[3] The lung and bronchus, prostate, female breast, and colon and rectum were the most common cancer sites for all racial and ethnic populations in the United States and together accounted for approximately 54 percent of all newly diagnosed cancers.[1]

In addition to the human toll of cancer, the financial costs of cancer are substantial.[1] The overall annual costs for cancer are estimated at $107 billion, with $37 billion for direct medical costs (the total of all health expenditures), $11 billion for costs of illness (the cost of low productivity due to illness), and $59 billion for costs of death (the cost of lost productivity due to death). Treatment for lung, breast, and prostate cancers alone accounts for more than half of the direct medical costs.

Leading Sites of New Cancer Cases, 1999



Note: Estimates exclude basal and squamous cell skin cancer and carcinomas in situ except urinary bladder.

Source: American Cancer Society, *Surveillance Research*, 1999.

Disparities

Cancer death rates vary by gender, race, and ethnicity.[3] Male cancer death rates peaked in 1990 at 220.8 per 100,000, and female death rates peaked a year later at 142.2 per 100,000. After the peak year, through 1996, male cancer deaths for all sites decreased on average by 1 percent per year, and female deaths decreased on average by 0.4 percent per year. There were significant decreases in mortality for lung, prostate, brain, and other nervous system cancers in males and a significant decrease in breast cancer mortality for females.[3] Among males, lung cancer death rates have declined since 1990. In contrast, lung cancer death rates have continued to increase among females. Since 1987, more females have died from lung cancer than breast cancer.

African Americans are about 34 percent more likely to die of cancer than are whites and more than two times more likely to die of cancer than are Asian/Pacific Islanders, American Indians, and Hispanics.[1] African American women are more likely to die of breast and colon cancers than are women of any other racial and ethnic group, and they have approximately the same lung cancer mortality rates as white women. African American men have the highest mortality rates of colon and rectum, lung, and prostate cancers. Age-adjusted lung cancer death rates are approximately 40 percent higher among African American males than white males. Little difference in age-adjusted lung cancer death rates has been observed between African American females and white females. Hispanics have higher rates of cervical, esophageal, gallbladder, and stomach cancers. Similarly, some specific forms of cancer affect other ethnic groups at rates higher than the national average (for example, stomach and liver cancers among Asian American populations and colon and rectum cancer among Alaska Natives). Racial and ethnic groups have lower survival rates than whites for most cancers.[1]

Differences between the races represent both a challenge to understand the reasons and an opportunity to reduce illness and death and to improve survival rates.

The Hispanic cancer experience also differs from that of the non-Hispanic white population, with Hispanics having higher rates of cervical, esophageal, gallbladder, and stomach cancers. New cases of female breast and lung cancers are increasing among Hispanics, who are diagnosed at later stages and have lower survival rates than whites.

The recent decrease in deaths from breast cancer in white females is attributed to greater use of breast cancer screening in regular medical care. However, new cases of breast cancer in African American females continue to increase, and deaths continue to increase as well, in part, because breast cancer is diagnosed at later stages in African American females.[1]

Data on colorectal cancer (CRC) show a decline in new cases and death rates in white males and females, stable new case rates in African Americans, and a continued rise in death rates in African American males. Five-year survival rates are 64 percent in whites and 52 percent in African Americans (1989-94). Early detection and treatment play a key role in these survival rates.

New cases of prostate cancer peaked in 1992 at 190.8 per 100,000 people and declined on average by 8.5 percent each year from 1992 to 1996. Prostate cancer death rates peaked in 1991 at 26.7 per 100,000 people; rates decreased on average by 2.1 percent each year from 1991 to 1995. Causes of the trends are unclear but may be attributed to a number of factors that are under investigation.

Possible disparities regarding the health status of lesbian women and possible barriers to access to health services by lesbians have been identified by the Institute of Medicine as a research priority.[6]

Opportunities

Evidence suggests that several types of cancer can be prevented and that the prospects for surviving cancer continue to improve. The ability to reduce cancer death rates depends, in part, on the existence and application of various types of resources. First, the means to provide culturally and linguistically appropriate information on prevention, early detection, and treatment to the public and to health care professionals are essential. Second, mechanisms or systems must exist for providing people with access to state-of-the-art preventive services and treatment. Where suitable, participation in clinical trials also should be encouraged. Third, a mechanism for maintaining continued research progress and for fostering new research is essential. Genetic information that can be used to improve disease prevention strategies is emerging for many cancers and may provide the foundation for improved effectiveness in clinical and preventive medicine services.

To provide new opportunities for cancer prevention and control in the future, there is a continuing and vital need to foster new, innovative research on both the causes of cancer (including genetic and environmental causes) and on methods to translate biologic and epidemiologic findings into effective prevention and control programs for use by government and community organization to further reduce the Nation's cancer burden.

These needs can be met, in part, with the network of cancer control resources now in place. This network has the organizational and personnel capabilities for various cancer interventions. Despite the extent of these resources, they alone are insufficient to reduce deaths from cancer. Gaps exist in information transfer, optimal practice patterns, research capabilities, and other areas. These must be recognized and filled to meet cancer prevention and control needs.

It is estimated that as much as 50 percent or more of cancer can be prevented through smoking cessation and improved dietary habits, such as reducing fat consumption and increasing fruit and vegetable consumption.[7, 8] Physical activity and weight control also can contribute to cancer prevention.[9, 10]

Scientific data from randomized trials of cancer prevention together with expert opinions suggest that compliance with screening recommendations for cancer of the breast, cervix, and colon/rectum could reduce deaths from these cancers.

To reduce breast cancer deaths, a high percentage of females in the United States aged 40 years and older need to comply with screening recommendations. A reduction in breast cancer deaths could be expected to occur after a delay of roughly 7 years.[11] To reduce cervical cancer deaths, a high percentage of females in the United States who are aged 18 years and older need to comply with screening recommendations. Evidence from randomized preventive trials is unavailable, but expert opinion suggests that a beneficial impact on cervical cancer death rates would be expected to occur after a delay of a few years.

Evidence shows that a reduction in CRC deaths can be achieved through detection and removal of precancerous polyps and treatment of CRC in its earliest stages. The findings from three randomized controlled trials indicate that biennial screening with fecal occult blood tests (FOBT) can reduce deaths from CRC by 15 to 21 percent in people aged 45 to 80 years.[12, 13, 14] One trial[15] reported a 33 percent reduction in deaths with annual screening in the same age groups, and a simulation model showed a 56 percent reduction.[16] The efficacy of sigmoidoscopy has been supported by three case-control studies[17, 18, 19] that showed 59 to 79 percent reductions in CRC deaths from cancers within reach of the sigmoidoscope in age groups 45 years and older.

Prostate cancer interventions that include preventive strategies are not available at this time because it is unclear whether any of the factors that increase the risk of prostate cancer can be changed. Race and age are risk factors: African Americans and older men are at higher risk. Widespread prostate cancer screening should be approached with caution until the results of clinical trials provide evidence that screening does more good than harm.[20] Some advocates favor screening programs targeting high-risk groups, including African Americans and males with a positive family history of prostate cancer. However, there is no clinical evidence that screening tests should be performed with these high-risk groups.

Melanoma and other skin cancers were expected to claim the lives of almost 9,200 persons in 1999.[1] Insufficient evidence exists to determine whether routine skin examinations (self or physician) decrease deaths from melanoma or other skin cancers. However, many of the skin cancers diagnosed each year could be prevented by limiting exposure to the sun, by wearing protective clothing, and by using sunscreen. Research into the genetic risk of disease may provide the basis for identifying the individuals most at risk and the preventive methods best tailored for reducing those risks.

For all cancers, treatments designed to increase survival are needed along with improved access to state-of-the-art care. In addition to measurements of survival, indices of quality of life for both the short term and long term are regarded as important considerations.

Interim Progress Toward Year 2000 Objectives

The Healthy People 2000 objective for total cancer deaths was achieved for the total population by 1995. Lung cancer deaths declined for the first time in 50 years in 1991, declined again in 1992, remained level in 1993, and then dropped again in 1994, 1995, and 1996. The decline in the age-adjusted death rate for CRC for the total population has gone beyond the year 2000 target, but declines in death rates have not been as substantial for the black population. Improvements were observed in cancer risk factors, such as tobacco use and dietary fat intake. Data also showed some improvement in the proportion of women receiving mammograms and Pap tests. In addition, for both mammograms and Pap tests, the disparity in use rates for most of the population subgroups and those for all women either has been reduced or eliminated.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Cancer

Goal: Reduce the number of new cancer cases as well as the illness, disability, and death caused by cancer.

Number	Objective
3-1	Cancer deaths
3-2	Lung cancer deaths
3-3	Breast cancer deaths
3-4	Cervical cancer deaths
3-5	Colorectal cancer deaths
3-6	Oropharyngeal cancer deaths
3-7	Prostate cancer deaths
3-8	Melanoma cancer deaths
3-9	Sun exposure
3-10	Provider counseling about preventive measures
3-11	Pap tests
3-12	Colorectal cancer screening
3-13	Mammograms
3-14	Statewide cancer registries
3-15	Cancer survival

Healthy People 2010 Objectives

3-1. Reduce the overall cancer death rate.

Target: 158.7 cancer deaths per 100,000 population.

Baseline: 201.4 cancer deaths per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: 21 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Cancer Deaths** Rate per 100,000
TOTAL	205.7
Race and ethnicity	
American Indian or Alaska Native	131.8
Asian or Pacific Islander	127.2
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	262.1
White	202.2
Hispanic or Latino	125.5
Not Hispanic or Latino	210.4
Black or African American	268.5
White	205.7
Gender	
Female	171.6
Male	258.0
Education level (aged 25 to 64 years)	
Less than high school	137.1
High school graduate	141.6
At least some college	82.3

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

3-2. Reduce the lung cancer death rate.

Target: 44.8 deaths per 100,000 population.

Baseline: 57.4 lung cancer deaths per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: 22 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Lung Cancer Deaths** Rate per 100,000
TOTAL	58.1
Race and ethnicity	
American Indian or Alaska Native	36.3
Asian or Pacific Islander	28.9
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	67.9
White	58.0
Hispanic or Latino	23.9
Not Hispanic or Latino	60.2
Black or African American	69.6
White	59.9
Gender	
Female	41.4
Male	81.6
Education level (aged 25 to 64 years)	
Less than high school	48.3
High school graduate	42.0
At least some college	18.4

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Lung cancer is the most common cause of cancer death among both females and males in the United States. Estimates indicated that 171,600 (77,600 females and 94,000 males) new cases of lung cancer would be diagnosed in 1999; 158,900 persons (68,000 females and 90,900 males) would die from lung cancer in 1999, accounting for 28 percent of all cancer deaths.[1]

Cigarette smoking is the most important risk factor for lung cancer, accounting for 68 to 78 percent of lung cancer deaths among females and 88 to 91 percent of lung cancer deaths among males.[21] Other risk factors include occupational exposures (radon, asbestos) and indoor and outdoor air pollution (radon, environmental tobacco smoke).[22] One to two percent of lung cancer deaths are attributable to air pollution.[23] Smoking cessation decreases the risk of lung cancer to 30-50 percent of that of continuing smokers after 10 years of abstinence.[7]

3-3. Reduce the breast cancer death rate.

Target: 22.2 deaths per 100,000 females.

Baseline: 27.7 breast cancer deaths per 100,000 females in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: 20 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Females, 1997*	**Breast Cancer Deaths** Rate per 100,000
TOTAL	28.6
Race and ethnicity	
American Indian or Alaska Native	13.1
Asian or Pacific Islander	12.6
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	37.7
White	28.0
Hispanic or Latino	17.8
Not Hispanic or Latino	29.2
Black or African American	38.7
White	28.4

Females, 1997*	Breast Cancer Deaths Rate per 100,000
Education level (aged 25 to 64 years)	
Less than high school	21.2
High school graduate	29.6
At least some college	22.9

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Breast cancer is the most common cancer among women in the United States. An estimated 175,000 new cases were expected to be diagnosed in 1999. About 43,700 U.S. women were expected to die from breast cancer in 1999, accounting for about 16.5 percent of cancer deaths among women.[1] Death from breast cancer can be reduced substantially if the tumor is discovered at an early stage. Mammography is the most effective method for detecting these early malignancies. Clinical trials have demonstrated that mammography screening can reduce breast cancer deaths by 20 to 39 percent in women aged 50 to 74 years and about 17 percent in women aged 40 to 49 years.[24] Breast cancer deaths can be reduced through increased adherence with recommendations for regular mammography screening.

Many breast cancer risk factors, such as age, family history of breast cancer, reproductive history, mammographic densities, previous breast disease, and race and ethnicity, are not subject to intervention.[25, 26] However, being overweight is a well-established breast cancer risk for post-menopausal women that can be addressed.[25] Avoiding weight gain is one method by which older women may reduce their risk of developing breast cancer.

3-4. Reduce the death rate from cancer of the uterine cervix.

Target: 2.0 deaths per 100,000 females.

Baseline: 3.0 cervical cancer deaths per 100,000 females in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Females, 1997*	**Cervical Cancer Deaths** Rate per 100,000
TOTAL	3.2
Race and ethnicity	
American Indian or Alaska Native	4.0
Asian or Pacific Islander	3.0
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	6.5
White	2.8
Hispanic or Latino	3.8
Not Hispanic or Latino	3.1
Black or African American	6.7
White	2.7
Education level (aged 25 to 64 years)	
Less than high school	7.7
High school graduate	5.1
At least some college	2.1

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Cervical cancer is the 10th most common cancer among females in the United States, with an estimated 12,800 new cases in 1999. The number of new cases of cervical cancer is higher among racial and ethnic minority females than among white females. An estimated 4,800 U.S. females were expected to die from cervical cancer in 1999.[1] Cervical cancer accounts for about 1.8 percent of cancer deaths among females. Infections of the cervix with certain types of sexually transmitted human papilloma virus increases risk of cervical cancer and may be responsible for most cervical cancer in the United States.[27]

Considerable evidence suggests that screening can reduce the number of deaths from cervical cancer. Invasive cervical cancer is preceded in a large proportion of cases by precancerous changes in cervical tissue that can be identified with a Pap test. If cervical cancer is detected early, the likelihood of survival is almost 100 percent with appropriate treatment and followup; that is, almost all cervical cancer deaths could be avoided if all females complied with screening and followup recommendations.[28] Risk is substantially decreased among former smokers in comparison to continuing smokers.[7]

3-5. Reduce the colorectal cancer death rate.

Target: 13.9 deaths per 100,000 population.

Baseline: 21.1 colorectal cancer deaths per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: 34 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Colorectal Cancer Deaths** Rate per 100,000
TOTAL	21.6
Race and ethnicity	
American Indian or Alaska Native	14.5
Asian or Pacific Islander	13.5
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	28.8
White	21.1
Hispanic or Latino	12.8
Not Hispanic or Latino	22.1
Black or African American	29.5
White	21.4
Gender	
Female	18.4
Male	26.0
Education level (aged 25 to 64 years)	
Less than high school	10.4
High school graduate	12.0
At least some college	7.7

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Colorectal cancer is the second leading cause of cancer-related deaths in the United States. An estimated 129,400 cases (67,000 females, 62,400 males) of CRC and 56,600 deaths (28,800 females, 27,800 males) from CRC were expected to occur in 1999. When cancer-related deaths are estimated separately for males and females, however, CRC becomes the third leading cause of cancer death behind lung and breast cancer for females and behind lung and prostate cancer for males.[1]

Risk factors for CRC may include age, personal and family history of polyps or colorectal cancer, inflammatory bowel disease, inherited syndromes, physical inactivity (colon only), obesity, alcohol use, and a diet high in fat and low in fruits and vegetables.[29] Detecting and removing precancerous colorectal polyps and detecting and treating the disease in its earliest stages will reduce deaths from CRC. FOBT and sigmoidoscopy are widely used to screen for CRC, and barium enema and colonoscopy are used as diagnostic tests.

3-6. Reduce the oropharyngeal cancer death rate.

Target: 2.6 deaths per 100,000 population.

Baseline: 2.9 oropharyngeal deaths per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Oropharyngeal Cancer Deaths** Rate per 100,000
TOTAL	3.0
Race and ethnicity	
American Indian or Alaska Native	2.6
Asian or Pacific Islander	2.5
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	4.7
White	2.8
Hispanic or Latino	1.8
Not Hispanic or Latino	3.1
Black or African American	4.8
White	2.9
Gender	
Female	1.8
Male	4.6

Total Population, 1997*	**Oropharyngeal Cancer Deaths** Rate per 100,000
Education level (aged 25 to 64 years)	
Less than high school	3.5
High school graduate	3.0
At least some college	1.3

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Oral and pharyngeal cancers comprise a diversity of malignant tumors that affect the oral cavity and pharynx; the overwhelming majority of these tumors are squamous cell carcinomas. In 1999, 29,000 new cases of oropharyngeal cancer were expected to be diagnosed, and approximately 8,100 deaths were expected to occur from the disease. Oropharyngeal cancer is the 10th most common cancer among U.S. men and the 14th most common among U.S. women.[1] Its 5-year survival rate is only 53 percent. The risk of oral cancer is increased in current smokers. Alcohol consumption is an independent risk factor, and when alcohol is combined with use of tobacco products, 90 percent of all oral cancers are explained.[30]

3-7. Reduce the prostate cancer death rate.

Target: 28.7 deaths per 100,000 males.

Baseline: 31.9 prostate cancer deaths per 100,000 males in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Males, 1997*	**Prostate Cancer Deaths** Rate per 100,000
TOTAL	33.8
Race and ethnicity	
American Indian or Alaska Native	19.3
Asian or Pacific Islander	14.5
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC

Males, 1997*	**Prostate Cancer Deaths** Rate per 100,000
Black or African American	71.1
White	31.1
Hispanic or Latino	20.8
Not Hispanic or Latino	34.4
Black or African American	72.5
White	31.5
Education level (aged 25 to 64 years)	
Less than high school	4.2
High school graduate	4.6
At least some college	3.1

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Prostate cancer is the most commonly diagnosed form of cancer (other than skin cancer) in males and the second leading cause of cancer death among males in the United States. Prostate cancer was expected to account for an estimated 179,300 cases and 37,000 deaths in 1999, or about 27 percent and 14 percent of the cases and deaths due to all cancers, respectively.[1] Prostate cancer is most common in men aged 65 years and older, who account for approximately 80 percent of all cases of prostate cancer.

Digital rectal examination (DRE) and the prostate-specific antigen (PSA) test are two commonly used methods for detecting prostate cancer. Clinical trials of the benefits of DRE and PSA screening are under way, with results expected in the early 21st century.

Although several treatment alternatives are available for prostate cancer, their impact on reducing death from prostate cancer when compared with no treatment in patients with operable cancer is uncertain.[31, 32, 33] Efforts aimed at reducing deaths through screening and early detection remain controversial because of the uncertain benefits and potential risks of screening, diagnosis, and treatment.

3-8. Reduce the rate of melanoma cancer deaths.

Target: 2.5 deaths per 100,000 population.

Baseline: 2.8 melanoma cancer deaths per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: 11 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Melanoma Cancer Deaths** Rate per 100,000
TOTAL	2.8
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	0.6
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	0.6
White	3.1
Hispanic or Latino	0.8
Not Hispanic or Latino	2.8
Black or African American	0.6
White	3.3
Gender	
Female	1.9
Male	4.0
Education level (aged 25 to 64 years)	
Less than high school	1.8
High school graduate	2.8
At least some college	2.3

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Melanoma, the deadliest of all skin cancers, accounted for an estimated 44,200 new cancer cases and 7,300 deaths in 1999.[1] Trends show annual rises in the number of new cases of 4.3 percent (1973-90) and 2.5 percent (1990-95) and an annual rise in deaths of 1.7 percent (1973-90) followed by a decline of 0.4 percent in 1990-95. In whites, the population at highest risk, death rates are twice as high in males as in females.[3]

Although the cause of melanoma is unknown, risk factors include a personal or family history of melanoma, the presence of atypical moles, a large number of moles, intermittent sun exposure, a history of sunburns early in life, freckles, and sun-sensitive skin (as measured by poor tanning ability and light skin, eye, or hair color).[34] Evidence is insufficient to determine whether early detection through routine skin examination (self or physician) decreases the number of deaths from melanoma, but reduced ultraviolet exposure is likely to have a beneficial impact on the risk of melanoma and other skin cancers (basal and squamous cell skin cancers).[33]

3-9. Increase the proportion of persons who use at least one of the following protective measures that may reduce the risk of skin cancer: avoid the sun between 10 a.m. and 4 p.m., wear sun-protective clothing when exposed to sunlight, use sunscreen with a sun protective factor (SPF) of 15 or higher, and avoid artificial sources of ultraviolet light.

3-9a. (Developmental) Increase the proportion of adolescents in grades 9 through 12 who follow protective measures that may reduce the risk of skin cancer.

Potential data source: Youth Risk Behavioral Surveillance System (YRBSS), CDC, NCCDPHP.

3-9b. Increase the proportion of adults aged 18 years and older who follow protective measures that may reduce the risk of skin cancer.

Target: 75 percent of adults aged 18 years and older use at least one of the identified protective measures.

Baseline: 49 percent of adults aged 18 years and older regularly used at least one protective measure in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS. Data on artificial ultraviolet light source are developmental.

Persons Aged 18 Years and Older, 1992*	Type of Protective Measure			
	3-9b. Regularly Used At Least One Protective Measure	Limited Sun Exposure†	Wore Protective Clothing†	Used Sun-screen†
	Percent			
TOTAL	54	32	29	29
Race and ethnicity				
American Indian or Alaska Native	42	DSU	DSU	DSU
Asian or Pacific Islander	52	38	35	16
Asian	DNA	DNA	DNA	DNA
Native Hawaiian and other Pacific Islander	DNA	DNA	DNA	DNA
Black or African American	54	45	30	9
White	54	30	29	32
Hispanic or Latino	47	35	26	20
Not Hispanic or Latino	54	32	29	29
Black or African American	54	46	31	9
White	54	30	29	33
Gender				
Female	61	39	29	37
Male	46	24	28	20
Education level (aged 25 years and older)				
Less than high school	52	38	30	17
High school graduate	54	34	30	29
Some college	60	32	35	37
Family income level				
Poor	52	39	27	17
Near poor	54	36	30	22
Middle/high income	56	30	29	34
Geographic location				
Urban	54	33	28	30
Rural	52	29	31	26

Persons Aged 18 Years and Older, 1992*	Type of Protective Measure			
	3-9b. Regularly Used At Least One Protective Measure	Limited Sun Exposure†	Wore Protective Clothing†	Used Sun-screen†
	Percent			
Disability status				
With activity limitations	57	38	33	27
Without activity limitations	53	31	28	29

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

†Data for limit sun exposure, use sunscreen, and wear protective clothing are displayed to further characterize the issue.

3-10. Increase the proportion of physicians and dentists who counsel their at-risk patients about tobacco use cessation, physical activity, and cancer screening.

Target and baseline:

Objective	Increase Counseling About Tobacco Use Cessation, Physical Activity, and Cancer Screening	1988 Baseline (unless noted)	2010 Target
		Percent	
3-10a.	Internists who counsel about smoking cessation	50	85
3-10b.	Family physicians who counsel about smoking cessation	43	85
3-10c.	Dentists who counsel about smoking cessation	59 (1997)	85
3-10d.	Primary care providers who counsel about blood stool tests	56	85
3-10e.	Primary care providers who counsel about protoscopic examinations	23	85
3-10f.	Primary care providers who counsel about mammograms	37	85
3-10g.	Primary care providers who counsel about Pap tests	55	85
3-10h.	Primary care providers who counsel about physical activity	22 (1995)	85

Target setting method: Better than the best.

Data sources: Survey of Physicians' Attitudes and Practices in Early Cancer Detection, NIH, NCI; National Ambulatory Medical Care Survey (NAMCS), CDC, NCHS; Survey of Current Issues in Dentistry, American Dental Association.

Smoking cessation,[7, 21] adoption of healthy diets,[8] increased physical activity,[9, 10] and increased cancer screening[11, 12, 13, 14, 15, 16, 17, 18, 19] can all contribute to reduced numbers of cancer deaths. Experts recommend that providers screen patients for breast, cervical, and colorectal cancers and counsel patients to prevent or reduce tobacco use, promote physical activity, and promote a healthy diet.[33] Provider counseling should be conducted in a linguistically and culturally appropriate manner.

3-11. Increase the proportion of women who receive a Pap test.

Target and baseline:

Objective	Pap Test	1998 Baseline*	2010 Target
		Percent	
3-11a.	Women aged 18 years and older who have ever received a Pap test.	92	97
3-11b.	Women aged 18 years and older who received a Pap test within the preceding 3 years.	79	90

*Preliminary data; age adjusted to the year 2000 standard population. Includes women without a uterine cervix.

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Women Aged 18 Years and Older, 1994*	3-11a. Pap Test Ever	3-11b. Pap Test in Past 3 Years
	Percent	
TOTAL	94	77
Race and ethnicity		
American Indian or Alaska Native	93	68
Asian or Pacific Islander	82	63
Asian	DNA	DNA
Native Hawaiian and other Pacific Islander	DNA	DNA
Black or African American	96	81
White	95	77

Women Aged 18 Years and Older, 1994*	**3-11a. Pap Test Ever**	**3-11b. Pap Test in Past 3 Years**
	Percent	
Hispanic or Latino	91	71
Not Hispanic or Latino	95	77
Black or African American	96	82
White	95	77
Education level (aged 25 years and older)		
Less than high school	94	66
High school graduate	97	76
At least some college	97	83
Disability status		
With activity limitations	95	74
Without activity limitations	94	78
Family income level		
Poor	91	69
Near poor	94	72
Middle/high income	96	82
Geographic location		
Urban	94	77
Rural	95	76

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population. Includes women without a uterine cervix.

*New data for population groups will be added when available.

3-12. Increase the proportion of adults who receive a colorectal cancer screening examination.

Target and baseline:

Objective	Colorectal Cancer Screening	1998 Baseline*	2010 Target
		Percent	
3-12a.	Adults aged 50 years and older who have received a fecal occult blood test (FOBT) within the preceding 2 years.	34	50
3-12b.	Adults aged 50 years and older who have ever received a sigmoidoscopy	38	50

*Preliminary data; age adjusted to the year 2000 standard population.

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 50 Years and Older, 1992*	3-12a. Fecal Occult Blood Test	3-12b. Sigmoidoscopy
	Percent	
TOTAL	30	33
Race and ethnicity		
American Indian or Alaska Native	DSU	DSU
Asian or Pacific Islander	DSU	DSU
Asian	DSU	DSU
Native Hawaiian and other Pacific Islander	DSU	DSU
Black or African American	25	27
White	30	34
Hispanic or Latino	22	28
Not Hispanic or Latino	30	33
Black or African American	25	27
White	31	34
Gender		
Female	30	31
Male	30	36

Adults Aged 50 Years and Older, 1992*	3-12a. Fecal Occult Blood Test	3-12b. Sigmoidoscopy
	Percent	
Education level		
Less than high school	23	28
High school graduate	29	30
At least some college	38	43
Disability status		
Persons with activity limitations	32	37
Persons without activity limitations	28	31
Family income level		
Poor	22	28
Near poor	28	33
Middle/high income	34	36
Geographic location		
Urban	31	34
Rural	25	31

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: crude rates; data are not age adjusted.

*New data for population groups will be added when available.

3-13. Increase the proportion of women aged 40 years and older who have received a mammogram within the preceding 2 years.

Target: 70 percent.

Baseline: 68 percent of women aged 40 years and older received a mammogram within the preceding 2 years in 1998 (preliminary data, age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Women Aged 40 Years and Older, 1994*	Mammogram Percent
TOTAL	59
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	49
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	61
White	59
Hispanic or Latino	51
Not Hispanic or Latino	60
Black or African American	60
White	61
Education level	
Less than high school	47
High school graduate	59
At least some college	67
Family income level	
Poor	43
Near poor	48
Middle/high income	67
Geographic location	
Urban	60
Rural	57
Disability status	
With activity limitations	55
Without activity limitations	61

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

3-14. Increase the number of States that have a statewide population-based cancer registry that captures case information on at least 95 percent of the expected number of reportable cancers.

Target: 45 States.

Baseline: 21 States in 1999.

Target setting method: 114 percent improvement.

Data sources: National Program of Cancer Registries, CDC; SEER Program, NIH, NCI.

Cancer surveillance serves as the foundation for a national comprehensive strategy to reduce illness and death from cancer. Such surveillance is the indispensable tool that enables public health professionals at the national, State, and community levels to better understand and tackle the cancer burden while advancing clinical, epidemiological, and health services research. In addition, surveillance data from cancer registries, such as cancer incidence and deaths, stage at diagnosis, treatment, and demographics of cancer patients, are essential for planning and evaluating cancer control programs, allocating preventive and treatment resources, targeting and conducting research, and responding to concerns from citizens about the occurrence of cancer in their communities.

Population-based State cancer registries that provide accurate, complete, and timely data are a critical component of the public health infrastructure in the United States. The National Program of Cancer Registries (NPCR) provides funds to 45 States to assist in planning or enhancing cancer registries; develop model legislation and regulations for programs to increase the viability of registry operations; set standards for data quality, completeness, and timeliness; provide training for registry personnel; and help establish computerized reporting and data processing systems. The National Cancer Institute's SEER Program covers the remaining 5 States.

3-15. Increase the proportion of cancer survivors who are living 5 years or longer after diagnosis.

Target: 70 percent.

Baseline: 59 percent of persons with invasive cancer of any type were living 5 years or longer after diagnosis in 1989–95.

Target setting method: 19 percent improvement.

Data source: Surveillance, Epidemiology, and End Results (SEER), NIH, NCI.

Persons With Invasive Cancer of Any Type, 1989-95	**5 Years or Longer Survival** Percent
TOTAL	59
Race and ethnicity	
American Indian or Alaska Native	DNA
Asian or Pacific Islander	DNA
Asian	DNA
Native Hawaiian and other Pacific Islander	DNA
Black or African American	48
White	61
Hispanic or Latino	DNA
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	61
Male	58
Education level (aged 25 to 64 years)	
Less than high school	DNA
High school graduate	DNA
At least some college	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Related Objectives From Other Focus Areas

19. Nutrition and Overweight

19-5. Fruit intake

19-6. Vegetable intake

19-8. Saturated fat intake

19-9. Total fat intake

21. Oral Health

21-6. Early detection of oral and pharyngeal cancer

21-17. Annual examinations for oral and pharyngeal cancer

27. Tobacco Use

27-1. Adult tobacco use

27-2. Youth tobacco use

27-5. Smoking cessation by adults

27-7. Smoking cessation by adolescents

27-8. Insurance coverage of cessation treatment

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Cancer: A term for diseases in which abnormal cells divide without control. Cancer cells can invade nearby tissue and can spread through the bloodstream and lymphatic system to other parts of the body.

Cancer screening: Checking for changes in tissue, cells, or fluids that may indicate the possibility of cancer when there are no symptoms.

Carcinoma: Cancer that begins in the epithelial tissue that lines or covers an organ.

Clinical trials: Research studies that evaluate the effectiveness of new treatment or disease prevention methods on patients.

Digital rectal exam (DRE): A test in which the health care provider inserts a lubricated, gloved finger into the rectum to feel for abnormal areas.

Fecal occult blood test (FOBT): A test to check for small amounts of hidden blood in stool.

Grade: A system for classifying cancer cells in terms of how abnormal they appear under a microscope. The grading system provides information about the probable growth rate of the tumor and its tendency to spread. The systems used to grade tumors vary with each type of cancer. Grading plays a role in treatment decisions.

Malignant: Cancerous.

Mammogram: An x-ray of the breast.

Melanoma: Cancer of the cells that produce pigment in the skin.

Pap (Papanicolaou) test: Microscopic examination of cells collected from the cervix. The Pap test is used to detect cancer, changes in the cervix that may lead to cancer, and noncancerous conditions, such as infection or inflammation.

PSA (prostate-specific antigen) test: A test that measures the level of an enzyme (PSA) in the blood that increases due to diseases of the prostate gland, including prostate cancer.

Risk factor: Something that increases a person's chance of developing a disease.

Sigmoidoscopy: A procedure in which the physician or health care provider looks inside the rectum and the lower part of the colon (sigmoid colon) through a flexible lighted tube. During the procedure, the physician or health care provider may collect samples of tissues or cells for closer examination.

Squamous cells: Flat cells that look like fish scales. These cells are found in the tissue that forms the surface of the skin, the lining of the hollow organs of the body, and the passages of the respiratory and digestive tracts.

Stage: The size and extent of a cancer, including whether the disease has spread from the original site into surrounding tissue and other parts of the body.

References

1. Landis, S.H.; Murray, T.; Bolden, S.; and Wingo, P.A. Cancer statistics, 1999. *CA: A Cancer Journal for Clinicians* 49(1):8-31, 1999.

2. Ries, L.A.G.; Kosary, C.L.; Hankey, B.F. et al. SEER Cancer Statistics Review, 1973-1996. Bethesda, MD: National Cancer Institute, 1999.

3. Wingo, P.A.; Ries, L.A.G.; Giovino, G.A. et al. Annual report to the nation on the status of cancer, 1973-1996, with a special section on lung cancer and tobacco smoking. *Journal of the National Cancer Institute.* 91(8):675-690, 1999.

4. Wingo, P.A.; Ries, L.A.; Rosenberg, H.M.; Miller, D.S.; and Edwards, B.K. Cancer incidence and mortality 1973-1995: A report card for the U.S. *Cancer* 82(6):1197-1207, 1998.

5. Brown, M.L.; Hodgson, T.A.; and Rice, D.P. Economic impact of cancer in the United States. In: Schottenfeld, D., and Fraumen, Jr., J.F., eds. *Cancer Epidemiology and Prevention*, 2nd ed. New York, NY: Oxford University Press, 1996.

6. Solarz, A., ed. *Lesbian Health: Current Assessment and Directions for the Future 1999.* Washington, DC. National Academy Press, 1999.

7. U.S. Department of Health and Human Services (HHS). *The Health Benefits of Smoking Cessation.* Public Health Service, Centers for Disease Control, Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. DHHS Publication No. CDC 90-8416, 1990.

8. Willet. W. Diet and Nutrition. In: Schottenfield, D., and Fraumeni, J.F., eds. Cancer *Epidemiology and Prevention*, 2nd ed. New York: Oxford University Press, 1996, 438-461.

9. Greenwald, P.; Kramer, B.; and Weed, D.L., eds. *Cancer Prevention and Control.* New York: Marcel Dekker, 1995, 303-327.

10. HHS. *Physical Activity and Health: A Report of the Surgeon General.* Atlanta, GA: Centers for Disease Control and Prevention, 1996.

11. Fletcher, S.W.; Black, W.; Harris, R., et al. Report of the International Workshop on Screening for Breast Cancer. *Journal of the National Cancer Institute* 85(20):1644-1656, 1993.

12. Kronborg, O.; Fenger, C.; Olsen, J.; Jorgensen O.D.; and Sondergaard. Randomized study of screening for colorectal cancer with faecal-occult-blood test. *Lancet* 348(9640):1467-1471, 1996.

13. Hardcastle, J.D.; Chamberlain, J.O.; Robinson, M.H.E.; et al. Randomized controlled trial of faecal-occult-blood screening for colorectal cancer. *Lancet* 348(9040):1472-1477, 1996.

14. Mandel, J.S. Reducing mortality from colorectal cancer by screening for fecal occult blood: Update, personal communication, 1997.

15. Mandel, J.S.; Bond, J.H.; Church T.R.; et al. Reducing mortality from colorectal cancer by screening for fecal occult blood. *New England Journal of Medicine* 328(19):1365-1371, 1993.

16. Winawer, S.; Fletcher, R.; Miller, L. et al. Colorectal cancer screening: clinical guidelines and rationale. *Gerontology* 112:594-642, 1997.

17. Selby, J.V.; Freidman, G.D.; Quesenberry, C.P., Jr.; and Weiss, N.S. A case-control study of screening sigmoidoscopy and mortality from colorectal cancer. *New England Journal of Medicine* 326(10):653-657, 1992.

18. Muller, A.D., and Sonnenberg, A. Protection by endoscopy against death from colorectal cancer—A case-control study among veterans. *Archives of Internal Medicine* 155:1741-1748, 1995.

19. Newcomb, P.A.; Norfleet, R.G.; Storer, B.E.; Surawicz, T.S.; and Marcus, P.M. Screening sigmoidoscopy and colorectal cancer mortality. *Journal of the National Cancer Institute* 84(20):1572-1575, 1992.

20. Alexander, F.E.; Edinburgh, G.L.; Andriole, G.L. et al. Rationale for randomized trials of prostate cancer screening. *European Journal of Cancer* 35(2):262-271, 1999.

21. Centers for Disease Control and Prevention. Cigarette smoking-attributable mortality and years of potential life lost—United States, 1990. *Morbidity and Mortality Weekly Report* 42(33):645-649, 1993.

22. Greenwald, P.; Kramer, B.S.; and Weed, D.L., eds. *Cancer Prevention and Control.* New York: Marcel Dekker, 1995, 568-569.

23. Doll, R., and Peto, R. The Causes of Cancer. Quantitative Estimates of Avoidable Risks of Cancer in the United States Today. New York: Oxford University Press, 1981.

24. Kerlikowske, K.; Grady, D.; Rubin, S.M.; et al. Efficacy of screening mammography. A meta-analysis. *Journal of the American Medical Association* 273:149-154, 1995.

25. Henderson, B.E.; Pike, M.C.; Bernstein, L.; and Ross, R.K. Breast cancer. In: Schottenfeld, D., and Fraumeni, J.F., Jr., eds. *Cancer Epidemiology and Prevention.* 2nd ed. New York: Oxford University Press, 1996, 1022-1039.

26. Harvard report on cancer prevention, Vol. 1. Causes of human cancer. *Cancer Causes & Control* 7(1 suppl.):1-59, 1996.

27. National Institutes of Health. *Cervical Cancer. NIH Consensus Statement* 14(1):1-38, 1996.

28. Schiffman, M.H.; Brinton, L.A.; Devesa, S.S.; and Fraumeni, J.F., Jr. Cervical cancer. In: Schottenfeld, D., and Fraumeni, J.F., Jr. (eds.). *Cancer Epidemiology and Prevention*, 2nd ed. New York: Oxford University Press, 1996, 1090-1116.

29. Schottenfeld, D., and Winawer, S.J. Cancers of the large intestine. In: Schottenfeld, D., and Fraumeni, J.F. Jr. (eds.). *Cancer Epidemiology and Prevention,*

2nd ed. New York: Oxford University Press, 1996, 813-840.

30. Silverman, S. Oral Cancer, 4th ed. Hamilton, Ontario, Canada: American Cancer Society, B.C. Decker, Inc., 1998.

31. Chodak, G.W.; Thisted, R.A.; Gerber, G.S.; Johansson, J.E.; Adolfsson J.; Jones, G.W.; et al. Results of conservative management of clinically localized prostate cancer. *New England Journal of Medicine* 330(4):242-248, 1994.

32. Gerber, G.S.; Thisted, R.A.; Scardino, P.T.; et al. Results of radical prostatectomy in men with clinically localized prostate cancer: Multi-institutional pooled analysis. *Journal of the American Medical Association* 276(8):615-619, 1996.

33. HHS. *Report of the U.S. Preventive Services Task Force: Guide to Clinical Preventive Services*, 2nd ed. Washington, DC: Government Printing Office, 1996.

34. Armstrong, B.K., and English, D.R. Cutaneous malignant melanoma. In: Schottenfeld, D., and Fraumeni, J.F. (eds.). *Cancer Epidemiology and Prevention*, 2nd ed. New York: Oxford University Press, 1996, 1282-1312.

4

Chronic Kidney Disease

Lead Agency: National Institutes of Health

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Goal

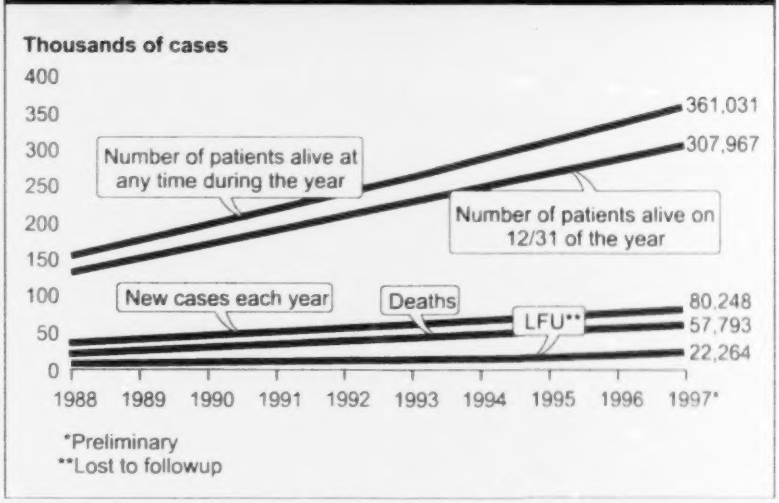
Reduce new cases of chronic kidney disease and its complications, disability, death, and economic costs.

Overview

Issues and Trends

Chronic kidney failure is the most significant result of chronic kidney disease. When kidney function has deteriorated and is no longer adequate to sustain life and the process is considered irreversible, renal replacement therapy (RRT)—dialysis or transplantation—becomes necessary to maintain life. Treated chronic kidney failure, also called end-stage renal disease, is the most feared consequence of kidney disease. Chronic renal insufficiency, however, is more common than treated chronic kidney failure and can also severely affect health and well-being. Therefore, ideally, programs should be directed at preventing the development of chronic renal insufficiency and its subsequent progression to end-stage renal disease.

End-Stage Renal Disease: Reported Trends
(United States, 1988–97)



*Preliminary
**Lost to followup

Source: NIH, U.S. Renal Data System, *1999 Annual Data Report*.

Unfortunately, chronic renal insufficiency is usually asymptomatic, and the exact number of people affected is unknown. The best available estimates are based on national surveys. Current estimates indicate approximately 10 million persons aged 12 years and older have some form of chronic kidney disease.[1] People with end-stage kidney failure represent a small fraction of all individuals with chronic kidney disease. A significant proportion of people with chronic kidney failure progress to end stage. The challenge is to initiate effective programs to prevent progression of established kidney disease and to institute methods to assess the progress of such initiatives.

In 1997, 80,248 new cases of end-stage kidney failure were reported.[2] Virtually all of these patients became permanently dependent on renal replacement therapy to stay alive.

Dialysis and kidney transplantation are the two methods of treatment available to people with kidney disease when they reach end stage. In 1997, 361,031 people in the United States depended on either dialysis or transplants to replace the function of their own failed kidneys.[3] Although these treatments are life-saving, dialysis and transplants have substantial limitations. Neither treatment restores normal health, and both are expensive.[4] The rates of illness, disability, and death experienced by individuals with treated chronic kidney failure are substantially higher than those of the general population.[5]

In most instances, terminal kidney failure develops as the result of progressive damage to the kidneys over a decade or more. A number of underlying diseases can cause progressive kidney failure. The two most important of these are diabetes, which in 1997 accounted for 42 percent of the new cases of chronic kidney failure, and high blood pressure, which was responsible for 26 percent of the new cases.[6] Other conditions that contribute significantly include glomerulonephritis, vasculitis, interstitial nephritis, and genetic and congenital disorders, particularly polycystic kidney disease.[7]

Chronic kidney failure affects people of all ages. The number of new cases peaks in the sixth decade of life. About 25 percent of persons arriving at end-stage in 1997 were under age 45 years, and 1.5 percent—nearly 1,100—were under age 20 years.[8] Kidney failure is particularly devastating in childhood, often resulting in impaired growth and development.

A worrisome increase in the number of new cases of kidney failure occurred between 1987 and 1997. The rate increased from 142 per million population in 1987 to 296 per million population in 1997,[8] representing an increase in the annual number of new cases from 34,797 to 80,248,[9] respectively.

This relentless growth in new cases of kidney failure has occurred in spite of the fact that death rates from other diseases, especially cardiovascular diseases, have declined.[10] The increase has not been confined to a single age group. Although the rates of new cases have grown slightly more rapidly for individuals aged 75 years and older, sizable increases have been noted in every age group.[11]

The causes of these increases are not completely understood, but one major factor appears to be an increase in the number of new cases of diabetes, particularly type

2 diabetes.[12, 13] In 1987, the rate of new cases of treated chronic kidney failure due to diabetes was 45 per million population. By 1997, the rate had increased to 124 per million population.[14]

Treatment for end-stage kidney failure has a substantial impact on Federal resources for health care. The 1972 Social Security Amendment (Public Law 92-603) instituted federally financed health care coverage for dialysis and renal transplantation, effective July 1, 1973. The cost of this program has far exceeded original expectations. Medicare spending in 1996 was estimated to be $10.96 billion, a 12.5 percent increase from the $9.74 billion spent in 1995. The total expenditure by all payers for treating these patients in 1996 was estimated at $14.55 billion, up from $13.05 billion in 1995.[15] Although this patient population made up only 0.6 percent of the total Medicare population in 1994, it consumed 5.1 percent of Medicare expenditures.[16] The increases in the cost per patient have been modest, but the driving force behind the growth in these expenditures has been the growing number of patients.

Kidney disease develops and progresses more rapidly to end stage in people with a variety of chronic health problems, such as type 1 or type 2 diabetes and high blood pressure, and family history of genetic kidney diseases. Therefore, people with these chronic health problems require counseling about the possibility of kidney disease and the steps they must take to avoid serious kidney complications. Also, people who have proteinuria and/or elevated serum creatinine have a greater likelihood of developing serious cardiovascular disease complications. Therefore, cardiovascular risk assessment and management should include kidney function to prevent the consequences of kidney failure. Because national data systems will not be available in the fist half of the decade to track progress, these issues are not addressed in the chapter.

Disparities

Kidney disease has a disproportionate impact on certain racial and ethnic groups, especially African Americans and American Indians or Alaska Natives. African Americans have the highest overall risk of chronic kidney disease. The reasons are not entirely explained by the higher number of persons in this population who have diabetes and high blood pressure.[17, 18] On average, African Americans develop end-stage kidney failure at an earlier age than whites (55.8 years compared to 62.2 years).[19] American Indians or Alaska Natives have a much higher risk of chronic kidney disease due to diabetes than whites. Overall, the rates of new cases are 4 times higher in African Americans and American Indians or Alaska Natives and 1.5 times higher in Asians or Pacific Islanders than in whites.

Annual increases in end-stage renal disease (ESRD) rates are greater in certain racial and ethnic populations than in white populations. Rates of new cases are increasing by 7 percent per year for African Americans, 10 percent per year for American Indians or Alaska Natives, and 11 percent for Asians or Pacific Islanders, compared to 6 percent per year for whites. Two communities of an American Indian Tribe, the Zuni Pueblo in New Mexico and in Sacaton, Arizona, may have the highest rates of chronic kidney failure in the world, at 12.6 and 14.0 times the overall average U.S. rate, respectively. Projections indicate that increases in the rates of new cases will continue in American Indians or Alaska Natives.

Although complete data are not yet available, some evidence indicates that persons of Mexican ancestry also may have a high risk of developing chronic kidney failure, particularly due to diabetes.[20, 21] In 1995, the Health Care Financing Administration changed the way in which data on race and ethnicity are collected on the Medical Evidence Form used to enroll patients into the Medicare End-Stage Renal Disease Program. Data from 1997 suggest that 7 percent of the ESRD patients are of Mexican ancestry and another 4 percent are of Hispanic ancestry from areas other than Mexico.[22]

The disproportionately high rates of chronic kidney failure among racial and ethnic minority groups have resulted in a greater burden of disease in these communities. In 1996, African Americans constituted 12.6 percent of the U.S. population but 29.8 percent of ESRD patients; American Indians or Alaska Natives constituted 0.9 percent of the U.S. population but 1.7 percent of those receiving renal replacement therapy.[23] On December 31, 1996, the point-prevalent rate per million population (adjusted for age and gender) was 3,404 in African Americans and 2,761 in American Indians or Alaska Natives, compared to 754 in whites, differences of 4.5- and 3.7-fold, respectively.[24] Data on persons of Asian or Pacific Islander ancestry indicate slightly higher incidence and prevalence rates than those for whites.[25]

There is a slight preponderance of kidney failure in men. In 1997, the incidence of treated chronic kidney failure was 322 per million population in men, compared with 271 per million in women.[5]

Renal transplantation is an important life-saving renal replacement therapy and has been shown to offer many advantages when compared with dialysis.[26, 27] In 1997, 12,445 transplants were performed in the United States. There was significant gender discrepancy, with 7,352 transplants for men, compared with 4,948 for women.[28] Racial and ethnic disparities also exist. Between 1994 and 1997, the first cadaveric transplantation rates (per 100 patient years) in the pediatric age group were 31 for black males, 28 for white males, 19 for black females, and 26 for white females. For recipients between the ages of 20 and 44 years, the rates were 7 for black males, 17 for white males, 7 for black females, and 15 for white females. In the 45- to 65-year age group, the rates were 4 for black males, 8 for white males, 2 for black females, and 6 for white females.[29] The data from the USRDS database also confirms that the transplantation rate is lower for Native Americans. The transplantation rate in Asians is equivalent to the rate in whites.[30] Reasons for the racial and ethnic disparities in the rate of transplantation are varied and include differences in finding HLA matches, cultural attitudes and beliefs on the part of both patients and health care providers, socioeconomic status, rates of organ donation, and geographic location.

Opportunities

Major risk factors for the development and progression of chronic kidney disease include diabetes, high blood pressure, environmental exposures, proteinuria, family history of kidney disease, and increasing age. African Americans and American Indians or Alaska Natives who have these risk factors are especially susceptible to the development of chronic and progressive kidney disease.[31, 32] Strategies for preventing the development of chronic kidney disease, therefore, should use appropriate methods to target these populations.

Under certain circumstances, the progression of kidney disease to end stage can be slowed or halted. Three interventions are effective in certain defined populations: glycemic control (for patients with diabetes), blood pressure control (for patients with high blood pressure), and use of angiotensin-converting enzyme (ACE) inhibitors. Interventions to slow the progression of kidney disease and prevent chronic kidney failure are likely to have the greatest impact if applied early in the course of the disease. Unfortunately, because kidney disease in its early stages is generally asymptomatic, many people who would benefit from these interventions are not identified. Early identification of patients at risk for chronic kidney disease is essential in reducing the growth in the number of new cases of treated chronic kidney failure. For example, microalbuminuria screening and more intensive treatment of patients with microalbuminuria are an important part of a strategy to reduce nephropathy in persons with type 1 diabetes, both in terms of economic indices and clinical outcomes.[33, 34, 35] This strategy also may be useful in type 2 diabetes.

Patient care must continue to emphasize interventions to conserve residual renal function. At a certain stage, however, providing appropriate preparation for renal replacement therapy becomes advisable. Several studies show that many patients with chronic kidney failure do not receive optimum preparation for treated chronic kidney failure in the year prior to the commencement of renal replacement therapy. This lack of optimal preparation has a substantial effect on the cost of care and on illness and disability at the time of renal replacement therapy.[36]

Kidney transplantation has emerged as the preferred therapy for many patients with treated chronic kidney failure, particularly children. Kidney transplantation confers a survival advantage over dialysis.[37] Over the past decade, transplantation success rates, especially 1-year patient and graft survival, have improved steadily. This improvement has been observed in both cadaveric and living-related transplants.[38, 39] For young children, kidney transplantation results in improved rates of growth.[40] Because of accumulating evidence on the advantages of transplantation, equal access of all population groups to transplantation is a substantial concern.

Certain racial and ethnic groups and women consistently have longer waiting times and lower rates of kidney transplantation than white males.[41][42][43][44][45][46]

Attention to risk factors for kidney disease and interventions to slow its progression are urgently needed. This need is driven by the increasing number of cases of treated chronic kidney failure, its disproportionate effect on certain racial and ethnic groups, the high societal cost of the disease, and the impact on Federal health care resources.

Interim Progress Toward Year 2000 Objectives

Healthy People 2000 did not include a chapter on chronic kidney disease. However, objectives relating to chronic kidney disease were included in several chapters. Since the mid-1980s, the number of new cases of ESRD has grown steadily. One objective concerning diabetes addressed ESRD. Results show that ESRD among people with diabetes has more than doubled since its baseline and is moving away from the target. Subobjectives tracking ESRD due to diabetes among African Americans and American Indians or Alaska Natives also are moving away from their targets.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Chronic Kidney Disease

Goal: Reduce new cases of chronic kidney disease and its complications, disability, death, and economic costs.

Number	Objective
4-1	End-stage renal disease
4-2	Cardiovascular disease deaths in persons with chronic kidney failure
4-3	Counseling for chronic kidney failure care
4-4	Use of arteriovenous fistulas
4-5	Registration for kidney transplantation
4-6	Waiting time for transplantation
4-7	Kidney failure due to diabetes
4-8	Medical therapy for persons with diabetes and proteinuria

4-1. Reduce the rate of new cases of end-stage renal disease (ESRD).

Target: 217 new cases per million population.

Baseline: 289 new cases of end-stage renal disease per million population in 1997.

Target setting method: Better than the best.

Data source: U.S. Renal Data System (USRDS), NIH, NIDDK.

Total Population, 1997	New Cases of End-Stage Renal Disease Rate per Million
TOTAL	289
Race and ethnicity	
American Indian or Alaska Native	586
Asian or Pacific Islander	344
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	873
White	218
Hispanic or Latino	DNA
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	242
Male	348
Age	
Under 20 years	13
20 to 44 years	109
45 to 64 years	545
65 to 74 years	1,296
75 years and older	1,292

Total Population, 1997	New Cases of End-Stage Renal Disease Rate per Million
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The current average annual increase in new cases of treated chronic kidney failure rates is 6 percent. Therefore, the expected rate in 2010 would be 612 new cases per million population. Without improvements in prevention and because of changes in demographics and increases in the number of cases of diabetes, rates of new cases of treated chronic kidney failure are expected to continue to rise 5 to 8 percent per year.

4-2. Reduce deaths from cardiovascular disease in persons with chronic kidney failure.

Target: 52 deaths per 1,000 patient years at risk.

Baseline: 70 deaths from cardiovascular disease per 1,000 patient years at risk (in persons with ESRD) in 1997.

Target setting method: Better than the best.

Data source: U.S. Renal Data System (USRDS), NIH, NIDDK.

Persons With Treated Chronic Kidney Failure, 1997	Deaths From Cardiovascular Disease Per 1,000 Patient Years at Risk
TOTAL	70
Race and ethnicity	
American Indian or Alaska Native	63
Asian or Pacific Islander	60
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	62
White	75

Persons With Treated Chronic Kidney Failure, 1997	**Deaths From Cardiovascular Disease** Per 1,000 Patient Years at Risk
Hispanic or Latino	DNA
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	73
Male	67
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Cardiovascular disease (CVD) is the major cause of death among patients with chronic renal failure and ESRD. Therefore, targeting reduction in CVD deaths will lead to a significant decrease in deaths for this population. The increased risk of CVD in kidney disease patients is evident before the onset of terminal kidney failure. Increases in the number of CVD deaths also are seen in individuals with proteinuria or elevated creatinine (both are markers of declining kidney function). CVD death rates in the treated chronic kidney failure population are estimated to be 30-fold higher than in the general population.[47] The known risk factors for cardiovascular disease in the general population include age, male gender, diabetes, elevated cholesterol, high blood pressure, smoking, and family history. Elevated homocysteine levels in the blood also may be an important risk factor in treated chronic kidney failure patients and at earlier stages in the progression of kidney disease.[48, 49, 50] Strategies to reduce CVD deaths should target risk reduction before terminal kidney failure.[51] All responsible health care providers can initiate the strategies to reduce CVD deaths as suggested in published guidelines.[51]

4-3. Increase the proportion of treated chronic kidney failure patients who have received counseling on nutrition, treatment choices, and cardiovascular care 12 months before the start of renal replacement therapy.

Target: 60 percent.

Baseline: 45 percent of newly diagnosed patients with treated chronic kidney failure received counseling on nutrition, treatment choices, and cardiovascular care in 1996.

Target setting method: 33 percent improvement (Better than the best will be used when data are available).

Data source: U.S. Renal Data System, (USRDS), NIH, NIDDK.

Patients Newly Diagnosed With Treated Chronic Kidney Failure, 1996	Received Counseling Prior to Renal Replacement Therapy Percent
TOTAL	45
Race and ethnicity	
American Indian or Alaska Native	DNA
Asian or Pacific Islander	DNA
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA
White	DNA
Hispanic or Latino	DNA
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	DNA
Male	DNA
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Medically appropriate care of kidney disease patients within 12 months before the start of renal replacement therapy reduces the substantial illness, disability, and death associated with treated chronic kidney failure.[52] Appropriate preparation for RRT includes reduction in cardiovascular disease risk factors, treatment of anemia, optimum therapy to preserve residual renal function, consultation about nutrition, and patient education about RRT methods. Patients should be seen by a specialist in RRT at least 12 months prior to initiation of RRT for general counseling. However, specific issues—such as vascular access and estimation of residual renal function—need to be addressed at least 6 months prior to RRT. Many patients with chronic renal failure are not seen by health care professionals who have RRT expertise until very near the time that RRT will be required. In a USRDS survey of 3,468 new dialysis patients, 55 percent had not been seen by a nephrologist 1 year prior to the start of RRT, and 33 percent had not been seen even 3 months before RRT.[53] Although control of diet is a major aspect of care for patients with chronic kidney failure and terminal kidney failure, by the start of RRT, 46 percent of the patients had not seen a dietitian.

4-4. Increase the proportion of new hemodialysis patients who use arteriovenous fistulas as the primary mode of vascular access.

Target: 50 percent.

Baseline: 29 percent of newly diagnosed patients with treated chronic kidney failure on hemodialysis used arteriovenous fistulas as the primary mode of vascular access in 1997.

Target setting method: 72 percent improvement (consistent with Dialysis Outcomes Quality Initiative (DOQI) guidelines). (Better than the best will be used when data are available).

Data source: U.S. Renal Data System, (USRDS), NIH, NIDDK.

Newly Diagnosed Chronic Kidney Failure Patients on Hemodialysis, 1997	**Arteriovenous Fistula Use** Percent
TOTAL	29
Race and ethnicity	
American Indian or Alaska Native	DNA
Asian or Pacific Islander	DNA
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA

Newly Diagnosed Chronic Kidney Failure Patients on Hemodialysis, 1997	**Arteriovenous Fistula Use** Percent
White	DNA
Hispanic or Latino	DNA
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	DNA
Male	DNA
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Patients receiving renal replacement therapy as of December 31, 1997, were treated predominantly (72 percent) with dialysis. Of these, 88 percent were on hemodialysis. Vascular access is the major lifeline for hemodialysis patients. The presence of a functioning vascular access site represents a critical factor in the well-being of these patients. Unfortunately, however, it also is the largest single cause of illness and disability in patients receiving hemodialysis for renal replacement therapy, accounting for nearly 25 percent of all hospitalizations. Complications and problems related to vascular access have been estimated to account for as much as 17 percent of the health care costs associated with treated chronic kidney failure.[54]

Monitoring the type of vascular access for dialysis in new patients is an important method to assess the adequacy of preparation for renal replacement therapy. Clinical evidence shows that patients with endogenous arteriovenous fistulas experience lower complication rates than patients with synthetic grafts. In the United States, the use rate for arteriovenous fistulas is under 30 percent.[54] Arteriovenous fistulas, ideally, should be placed at least 6 months before the start of dialysis. Early placement of arteriovenous fistulas is particularly important for elderly persons, because atherosclerotic vessels may take a much longer time to dilate to a usable diameter.

4-5. Increase the proportion of dialysis patients registered on the waiting list for transplantation.

Target: 66 percent of dialysis patients.

Baseline: 20 percent of newly diagnosed treated chronic kidney failure patients under age 70 years were registered on the waiting list in 1994-96.

Target setting method: Better than the best.

Data source: U.S. Renal Data System (USRDS), NIH, NIDDK.

Dialysis Patients Under Age 70 Years, 1994–96	Transplant Waiting List Percent
TOTAL	20
Race and ethnicity	
American Indian or Alaska Native	2
Asian or Pacific Islander	4
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	29
White	65
Hispanic or Latino	12
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	40
Male	60
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC
Age groups	
Under 20 years	3
20 to 39 years	31
40 to 59 years	51
60 to 69 years	15

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Successful renal transplantation confers many advantages, including improvements in physical and psychological growth in children and improved survival and quality of life for recipients in general. The prospects of receiving a kidney transplant, however, are determined by a number of factors. These factors include age, primary cause of kidney failure, race and ethnic origin, gender, geographic location, and availability of suitable donors. Any combination of these factors may directly influence the first important step in the process of receiving a kidney transplant—namely, being registered on the waiting list. Significant disparities exist in the people who are registered on the waiting list. Women and people from select racial and ethnic groups—particularly, African Americans—are less likely than other kidney transplant candidates to be registered on the waiting list.[55, 56, 57]

4-6. Increase the proportion of patients with treated chronic kidney failure who receive a transplant within 3 years of registration on the waiting list.

Target: 51 registrants per 1,000 patient years at risk.

Baseline: 41 registrants per 1,000 patient years at risk (since placed on dialysis) received a transplant within 3 years in 1995-97.

Target setting method: Better than the best.

Data source: U.S. Renal Data System (USRDS), NIH, NIDDK.

Renal Transplant Waiting List Registrants, 1995–97	**Transplant Within 3 Years** Rate per 1,000 Patient Years
TOTAL	41
Race and ethnicity	
American Indian or Alaska Native	30
Asian or Pacific Islander	DNA
Asian	50
Native Hawaiian and other Pacific Islander	DNA
Black or African American	30
White	49
Hispanic or Latino	DNA

Renal Transplant Waiting List Registrants, 1995–97	**Transplant Within 3 Years** Rate per 1,000 Patient Years
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	33
Male	49
Age	
Under 20 years	282
20 to 44 years	110
45 to 64 years	52
65 years and older	6
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Individuals from certain racial and ethnic populations (specifically, African Americans) move up the waiting list to receive kidney transplants at a slower rate than whites.[58, 59] The exact causes are unclear. Racial and ethnic disparities in waiting times may be influenced by genetic and biological factors (such as HLA types),[60] the request and consent procedures of organ procurement organizations, patient registration practices for a center or region, organ acceptance practices at each transplant center, geographic location, socioeconomic status, cultural attitudes and beliefs about organ donation, rates of organ donation within each local area, and the donor pool.[42, 61]

Reports also have documented a lower rate of transplantation in women.[illegible] The U.S. Department of Health and Human Services (HHS) is working toward the goal of making sure that all persons in the United States have an equal opportunity to receive a transplant, regardless of who they are or where they live. To increase access to transplantation, HHS launched the National Organ and Tissue Donation Initiative to increase overall organ and tissue donation. One aspect of the initiative is to learn more about the factors that influence organ and tissue donation, with a special emphasis on certain racial and ethnic minority communities. Health care workers, particularly in the area of transplantation, need to understand the various obstacles to organ donation and transplantation, especially in the groups with which they work, and to initiate programs and policies that are culturally sensitive and meaningful.

4-7. Reduce kidney failure due to diabetes.

Target: 78 diabetic persons with ESRD per million population.

Baseline: 113 diabetic persons with ESRD per million population in 1996.

Target setting method: Better than the best.

Data source: U.S. Renal Data System (USRDS), NIH, NIDDK.

Persons With Diabetes, 1996	New Cases of ESRD Rate per Million
TOTAL	113
Race and ethnicity	
American Indian or Alaska Native	482
Asian or Pacific Islander	156
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	329
White	79
Hispanic or Latino	DNA
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	103
Male	112
Age	
Under 20 years	0
20 to 44 years	35
45 to 64 years	276
65 to 74 years	514
75 years and older	263

Persons With Diabetes, 1996	New Cases of ESRD Rate per Million
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Convincing, consistent, and continuing scientific evidence shows that with secondary and tertiary prevention, microvascular complications of diabetes, especially diabetic kidney disease, can be reduced substantially. Enhanced quality of life, reductions in death rates, and reduced costs can result from improved clinical and public health diabetes prevention strategies directed at kidney disease and other microvascular and metabolic complications of diabetes. Monitoring the consequences of these strategies, including reductions in the magnitude of chronic renal insufficiency, terminal kidney failure, and other microvascular complications, should be an important component of an effective national public health program.

4-8. (Developmental) Increase the proportion of persons with type 1 or type 2 diabetes and proteinuria who receive recommended medical therapy to reduce progression to chronic renal insufficiency.

Potential data sources: National Ambulatory Medical Care Survey (NAMCS), CDC, NCHS; National Hospital Ambulatory Care Survey (NHAMCS), CDC, NCHS.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-2.	Health insurance coverage for clinical preventive services
1-3.	Counseling about health behaviors
1-7.	Core competencies in health provider training

5. Diabetes

5-2.	Prevent diabetes
5-3.	Reduce diabetes
5-4.	Diagnosis of diabetes
5-7.	Cardiovascular deaths in persons with diabetes
5-11.	Annual urinary microalbumin measurement
5-12.	Annual glycosylated hemoglobin measurement

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6. Disability and Secondary Conditions

6-1. Standard definition of people with disabilities in data sets

6-2. Feelings and depression among children with disabilities

6-3. Feelings and depression interfering with activities among adults with disabilities

6-5. Sufficient emotional support among adults with disabilities

6-6. Satisfaction with life among adults with disabilities

6-8. Employment parity

7. Educational and Community-Based Programs

7-7. Patient and family education

7-8. Satisfaction with patient education

7-9. Health care organization sponsorship of community health promotion activities

7-10. Community health promotion programs

7-11. Culturally appropriate community health promotion programs

8. Environmental Health

8-11. Elevated blood lead levels in children

8-14. Toxic pollutants

8-20. School policies to protect against environmental hazards

8-22. Lead-based paint testing

8-25. Exposure to heavy metals and other toxic chemicals

8-26. Information systems used for environmental health

8-27. Monitoring environmentally related diseases

8-29. Global burden of disease

10. Food Safety

10-1. Foodborne infections

10-2. Outbreaks of foodborne infections

10-5. Consumer food safety practices

10-6 Safe food preparation practices in retail establishments

11. Health Communication

11-2. Health literacy

11-4. Quality of Internet health information sources

11-6. Satisfaction with providers' communication skills

12. Heart Disease and Stroke

12-1. Coronary heart disease (CHD) deaths

12-2. Knowledge of symptoms of heart attack and importance of dialing 911

12-6. Heart failure hospitalizations

12-8. Knowledge of early warning symptoms of stroke

12-9. High blood pressure

12-10. High blood pressure control

12-11. Action to help control blood pressure

12-12. Blood pressure monitoring

12-16. LDL-cholesterol level in CHD patients

13. HIV

13-1. New AIDS cases
13-3. AIDS cases among persons who inject drugs
13-5. New HIV cases
13-8. HIV counseling and education for persons in substance abuse treatment
13-12. Screening for STDs and immunization for hepatitis B
13-17. Perinatally acquired HIV infection

14. Immunization and Infectious Diseases

14-1. Vaccine-preventable diseases
14-2. Hepatitis B in infants and young children
14-3. Hepatitis B in adults and high-risk groups
14-9. Hepatitis C
14-10. Identification of persons with chronic hepatitis C
14-16. Invasive early-onset group B streptococcal disease
14-28. Hepatitis B vaccination among high-risk groups

16. Maternal, Infant, and Child Health

16-10. Low birth weight and very low birth weight

17. Medical Product Safety

17-1. Monitoring of adverse medical events
17-2. Linked, automated information systems
17-3. Provider review of medications taken by patients
17-6. Blood donations

19. Nutrition and Overweight

19-1. Healthy weight in adults
19-2. Obesity in adults
19-8. Saturated fat intake
19-17. Nutrition counseling for medical conditions

20. Occupational Safety and Health

20-7. Elevated blood lead levels from work exposure

22. Physical Activity and Fitness

22-2. Moderate physical activity
22-3. Vigorous physical activity
22-13. Worksite physical activity and fitness

23. Public Health Infrastructure

23-2. Public access to information and surveillance data
23-3. Use of geocoding in health data systems
23-4. Data for all population groups
23-5. Data for Leading Health Indicators, Health Status Indicators, and Priority Data Needs at State, Tribal, and local levels

23-6. National tracking of Healthy People 2010 objectives

23-7. Timely release of data on objectives

23-17. Prevention research

25. Sexually Transmitted Diseases

25-3. Primary and secondary syphilis

25-8. Heterosexually transmitted HIV infection in women

25-10. Neonatal STDs

25-13. Hepatitis B vaccine services in STD clinics

27. Tobacco Use

27-1. Adult tobacco use

27-2. Adolescent tobacco use

27-5. Smoking cessation by adults

27-7. Smoking cessation by adolescents

27-10. Exposure to environmental tobacco smoke

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Arteriovenous fistulas: The type of vascular access created by joining a person's own (endogenous) artery to the nearby vein. The increase in blood flow in the vein leads to marked dilation of the vein and permits an easier insertion of needles for dialysis.

Chronic renal insufficiency, chronic renal failure, and end-stage renal disease (ESRD) (defined in this chapter as treated chronic renal failure): Terms describing the continuum of increasing renal dysfunction and decreasing glomerular filtration rate (GFR). Because of the progressive nature of kidney disease, these terms represent successive stages of disease in most patients.

Chronic renal insufficiency: The stage in chronic renal disease in which damage to the kidney already has resulted in significant impairment of renal function, but systemic manifestations are minimal. Most patients who have chronic renal insufficiency are asymptomatic. Chronic renal insufficiency usually is identified because the serum creatinine is slightly elevated (greater than 1.5 mg/dL in males or 1.2 mg/dL in females and greater than age-specific normative values in children). The serum creatinine test is insensitive and does not identify all persons who have chronic renal insufficiency. Although precise GFR limits cannot be assigned to this stage of disease, typically patients with chronic renal insufficiency have a GFR between 30 ml/min and 75 ml/min.

Chronic renal failure: The stage in chronic renal disease in which renal dysfunction has progressed to a level resulting in systemic manifestations. These manifestations include a rise in the blood concentration of urea, creatinine, and phosphate, which are removed by the kidneys, and other problems, such as anemia, bone disease, acidosis, and salt and fluid retention. Growth failure may be seen in children. Most patients with chronic renal failure progress to treated chronic renal failure (end-stage renal disease).

Diabetes (diabetes mellitus): A chronic disease due to insulin deficiency or resistance to insulin action and associated with hyperglycemia (elevated blood glucose levels). Over time, without proper preventive treatment, organ complications related to diabetes develop, including heart, nerve, foot, eye, and kidney damage as well as problems with pregnancy. Diabetes is classified into two major categories.

Type 1 diabetes (previously called insulin-dependent diabetes mellitus [IDDM] or juvenile-onset diabetes [JODM]): Represents clinically about 5 percent of all persons with diagnosed diabetes. Its clinical onset typically occurs at ages under 30 years, with more gradual development after age 30. Most often type 1 diabetes represents an autoimmune destructive disease in the beta (insulin-producing) cells of the pancreas in genetically susceptible individuals. Insulin therapy always is required to sustain life and maintain diabetes control.

Type 2 diabetes (previously called noninsulin-dependent diabetes mellitus [NIDDM] or adult-onset diabetes [AODM]): Refers to the most common form of diabetes in the United States and the world, especially in certain racial and ethnic groups and in elderly persons. Women who develop diabetes during pregnancy also are at increased risk of developing this type of diabetes later in life. In the United States, approximately 95 percent of all persons with diagnosed diabetes (10. 5 million) and 100 percent of all persons with undiagnosed (5.5 million) diabetes probably have type 2 diabetes.

Diabetic kidney disease: Kidney disease and resultant kidney functional impairment due to the longstanding effects of diabetes on the microvasculature of the kidney. Features include increased urine protein and decreased kidney function.

Dialysis: The process by which metabolic waste products are removed by cleansing of the blood directly through extracorporeal filtration membranes (hemodialysis) or indirectly by diffusion of waste products through the peritoneal membranes into instilled fluids (peritoneal dialysis).

End-stage renal disease (referred to in this focus area as treated chronic kidney failure):

The stage in chronic renal disease in which renal replacement therapy, dialysis, or kidney transplantation is needed to sustain life. Treated chronic kidney failure is generally an irreversible state. The glomerular filtration rate is usually less than 10 ml/min.

Glomerular filtration: The process by which the kidneys filter the blood, clearing it of toxins.

Glomerular filtration rate (GFR): The rate at which the blood is cleared by glomerular filtration and an important measure of kidney function. Normal GFR values in adults are between 100 and 150 ml/min. One of the most important hallmarks of chronic renal disease is a progressive decline in the rate of glomerular filtration. Generally, a GFR below 75 ml/min represents clinically significant renal insufficiency. A GFR of less than 10 ml/min represents kidney failure severe enough to require renal replacement therapy to maintain life.

Hemodialysis: The process by which biologic waste products are removed from the body through external blood circuit and external (artificial) membranes.

Glomerulonephritis: Inflammation in the primary filtration units (glomeruli) of the kidneys. Typically, this process leads to loss of blood, blood products, and protein into the urine. Unchecked or without effective treatment, this process could lead ultimately to permanent kidney damage and loss of kidney function and chronic kidney failure.

Incidence rate: A measure of the number of new cases of disease occurring in a specific population over a specific period of time, usually 1 year. For end-stage renal disease, the best information is based on the incidence of treated end-stage renal disease reported through Medicare to the U.S. Renal Data System. Available data exclude those patients who die without receiving treatment.

Interstitial nephritis: Inflammation in the supporting matrix of the kidneys. This process could result from damage caused by microorganisms (such as bacteria and viruses) or from toxic reaction to drugs or other substances such as lead and mercury.

Microalbuminuria: Abnormally elevated levels of albumin in the urine—but at levels too low to be detectable by the dipstick method used to test for protein in the urine. Increased urinary excretion of albumin, even if the concentration is too low to be detectable as dipstick proteinuria, has been associated with increased risk of progressive kidney disease in people with diabetes[6, 7] and increased risk of subsequent death in persons with[8] and without diabetes[9, 10] and in elderly individuals.[11] Microalbuminuria can be measured in several ways. If a random urine sample is used, the albumin concentration in the first-voided morning urine or the ratio of urine albumin to urine creatinine can be used. If a timed urine collection is available, an albumin excretion rate can be determined. Urine albumin concentrations of 30-300 µg/ml, urinary albumin to creatinine ratios of less than 3.5 mg/mmol, and urine albumin excretion rates of less than 15 µg/min all have been used as cutoff values for detection of microalbuminuria.

Patient year (at risk): A measure of the duration (in years) a patient has been exposed to the effects of a particular biologic or physiologic condition, such as chronic renal insufficiency or the effects of dialysis.

Polycystic kidney disease: A disorder (usually inherited) of the kidneys in which the normal kidney structures (particularly, the tubules) are replaced by sacs (or cysts) that ultimately increase in size and lead to further destruction of the supporting matrix of the kidneys. The most common variety is the adult polycystic kidney disease (ADPKD), which is inherited as an autosomal dominant genetic disease. ADPKD is usually characterized by elevated blood pressure, pain from enlarged cysts, blood in the urine, and a relentless progression to terminal kidney failure.

Prevalence rate: A measure of the total number of cases of disease existing in a specific population at a certain point in time (point prevalence) or over a certain period of time (period prevalence). Point prevalence rates reflect the number of individuals at the stated date.

Proteinuria: Abnormal levels of protein in the urine. Proteinuria is a marker for structural kidney damage or inflammation and also may be involved in the pathogenesis of progressive renal injury. Increased risks of developing progressive renal disease,[1,2] of death,[3,4] and of death due to cardiovascular disease[5] have been documented in persons with persistent proteinuria. Urine protein can be estimated by a dipstick method, which provides a semiquantitative estimate of concentration. More accurate measures include determining the ratio of urine protein to urine creatinine or the amount of protein excreted by a person in a 24-hour period.

Renal disease: A synonym for kidney disease.

Serum creatinine: A blood chemistry measurement used to estimate the level of kidney function. Serum creatinine is an important index for monitoring progression of disease in persons with chronic renal disease. Elevations in serum creatinine are an insensitive marker of early chronic renal insufficiency. In advanced renal failure, however, a change in serum creatinine is a more reliable indicator. This test remains the most widely available method used to estimate the glomerular filtration rate or to monitor changes in level of renal function.[12]

U.S. Renal Data System (USRDS): A national database of information on treated chronic kidney failure patients—new cases, illness, disability, and death outcomes. USRDS is based predominantly on data collected by the Health Care Financing Administration's Medicare treated chronic kidney failure program and is funded by a contract from the National Institutes of Health.[13] This database contains information on approximately 93 percent of all patients treated for treated chronic kidney failure in the United States. Most of the data cited in this focus area derive from USRDS reports. As noted, these numbers reflect reported cases of treated end-stage renal disease and, therefore, do not include patients who die without treatment or patients whose care is not reported to USRDS.

Vascular access: The means by which blood is removed from a person for cleansing during dialysis and safely and easily returned, when cleaned, into the body.

Vasculitis: Inflammation of the blood vessels. Typically, the cause of this process is unknown. Untreated, it leads to progression to relentless and specific organ failures, including chronic kidney failure, or death.

References

1. Jones, C.A.; McQuillan, G.M.; Kusek, J.W.; et al. Serum Creatinine Levels in the U.S. Population: Third National Health and Nutrition Examination Survey, *American Journal of Kidney Disease* 32:992-999, 1998.

2. U.S. Renal Data System (USRDS). 1999 *Annual Data Report*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Table A-1.

3. USRDS. *1999 ADR*, Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Table A- 1. Appendix, Table B-3.

4. USRDS. *1999 ADR*, Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Chapter X. 133-148.

5. USRDS. *1999 ADR*, Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Chapter V. 63-78.

6. USRDS. *1999 ADR*, Bethesda, MD: National Institutes of Health, National Institute of Diabetes and

Digestive and Kidney Diseases, April 1999, Appendix, Table A-1.

7. USRDS. *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Table A- 15.

8. USRDS. *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Table A-3.

9. USRDS. *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Table A- 1.

10. National Heart, Lung, and Blood Institute. *Morbidity and Mortality Chartbook on Cardiovascular Disease, Lung and Blood Diseases*. Bethesda, MD: Public Health Service, 1998.

11. USRDS. *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Tables A-1, A-2, and A-3.

12. Clark, C. How should we respond to the worldwide diabetes epidemic? *Diabetes Care* 21:475-476, 1998.

13. Centers for Disease Control and Prevention (CDC). *National Diabetes Fact Sheet: National Estimates and General Information on Diabetes in the United States*. Atlanta, GA: U.S. Department of Health and Human Services, 1997.

14. USRDS. *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Table A-6.

15. Eggers, P.W. Personal Communication. Health Care Financing Administration. 1999.

16. Perneger, T.V.; Klag, M.J.; Feldman, H.I.; and Whelton, P.K. Projection of hypertension related renal disease in middle-aged residents of the United States. *Journal of the American Medical Association* 269(10):1272-1277, 1993.

17. Whittle, J.C.; Whelton, P.K.; Seidler, AJ.; and Klag, M.J. Does racial variation in risk factors explain black-white differences in the incidence of hypertensive end-stage renal disease? *Archives of Internal Medicine* 151:1359-1364, 1991.

18. Brancati, F.L.; Whittle, J.C.; Whelton, P.K.; Seidler, A.J.; and Klag, M.J. The excess incidence of diabetic end-stage renal disease among blacks. A population based study of potential explanatory factors. *Journal of the American Medical Association* 268:3079-3084, 1992.

19. USRDS. *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Table A- 1. Appendix, Table A-14.

20. Gonzales Villalpano, C.G.; Stern, M.P.; Arrendondo Perez, B.; Martinez Diaz, S.; et al. Nephropathy in low income diabetics: the Mexico City Diabetes Study. *Archives of Medical Research* 27:367-372, 1996.

21. Pugh, J.A.; Stern, M.P.; Haffner, S.M.; Eifler, C.W.; and Zapata, M. Excess incidence of treatment of end-stage renal disease in Mexican Americans. *American Journal of Epidemiology* 127:135-144, 1998.

22. Agodoa, L.Y.C.; Roys, E.C.; Wolfe, R.A.; et al. ESRD among Hispanics in the U.S. *Journal of the American Society of Nephrology* 10:232A, 1999.

23. USRDS. *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Table B-3.

24. USRDS. *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1999, Appendix, Table ES-1.

25. USRDS. *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 199, Appendix, Table A.6.

26. Rettig, R., and Levinsky, N.G. Kidney failure and the Federal Government. Washington, DC: National Academy Press, 1991.

27. Port, F.K.; Wolfe, B.A.; Mauger, E.A.; et al. Comparison of survival probabilities for dialysis patients vs. cadaveric renal transplant recipients. *Journal of the American Medical Association* 270(11):1339-1343, 1993.

28. USRDS. *1999 ADR*. Appendix, Table F-1.

29. USRDS. *1999 ADR*. Chapter VII, 104-106.

30. USRDS. *1999 ADR*. Appendix, Table F-2.

31. Freedman, B.I.; Tuttle, A.B.; and Spray, B.J. Familial predisposition to nephropathy in African Americans with non-insulin-dependent diabetes mellitus. *Kidney Diseases* 25(5):710-713, 1995.

32. Siegel, J.; Krolewski, A.; Warran, J.; and Weinstein, M. Cost-effectiveness of screening and early treatment of nephropathy in pa-

tients with insulin-dependent diabetes mellitus. *Journal of the American Society of Nephrology* 3:S111 -S119, 1992.

33. Kiberd, B., and Jindal, K. Screening to prevent renal failure in insulin dependent diabetic patients: An economic evaluation. *British Medical Journal* 311:1595-1599, 1995.

34. Borch-Johnsen, K.; Wenzel, H.; Viberti, G.; and Mogensen, C. Is screening and intervention for microalbuminuria worthwhile in patients with insulin dependent diabetes? *British Medical Journal* 306:1722-1725, 1993.

35. Ifudu, O.; Dawood, M.; Homel, P.; and Friedman, E.A. Excess morbidity in patients starting uremia therapy without prior care by a nephrologist. *American Journal of Kidney Diseases* 28:841-845, 1996.

36. USRDS. *1997 Annual Data Report*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1997, 49-60.

37. USRDS. *1998 Annual Data Report*. Table G.19.

38. USRDS. *1998 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1998, Appendix, Table G.43.

39. Turenne, M.N.; Port, F.K.; Strawderman, R.L.; Ettenger, R.B.; Alexander, S.R.; Lewy, J.E.; Jones, C.A; Agodoa, L.Y.; and Held, P.J. Growth rates in pediatric dialysis patients and renal transplant recipients. *American Journal of Kidney Diseases* 30(2):193-203, 1997.

40. United Network for Organ Sharing (UNOS). *1997 Report of the Organ Procurement and Transplantation Network: Waiting List Activity and Donor Procurement*. Richmond, VA: United Network for Organ Sharing, 1997. Executive Summary, Kidney Volume. Rockville, MD: Health Resources and Services Administration, 1997.

41. Alexander, G.C., and Sehgal, A.R. Barriers to cadaveric renal transplantation among blacks, women, and the poor. *Journal of the American Medical Association* 280(13):1148-1152, 1998.

42. Bloembergen, W.E.; Mauger, E.A.; and Wolfe, R.A. Association of gender and access to cadaveric renal transplantation. *American Journal of Kidney Diseases* 30(6):733-738, 1997.

43. Narva, A.; Stiles, S.; Karp, S.; and Turak, A. Access of Native Americans to renal transplantation in Arizona and New Mexico. *Blood Purification* 14:293-304, 1996.

44. Ozminkowski, R.J.; White, A.J.; Hassol, M.S.P.H; and Murphy, M. Minimizing racial disparity regarding receipt of a cadaver kidney transplant. *American Journal of Kidney Disease* 30:749-759, 1997.

45. USRDS. *1997 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1997, 107-112.

46. Levey, A.S.; Beto, J.A.; Coronado, B.E.; et al. Controlling the epidemic of cardiovascular disease in chronic renal disease. What do we know? What do we need to learn? Where do we go from here? *Report of the National Kidney Foundation Task Force on Cardiovascular Disease*. New York: National Kidney Foundation, July 1998.

47. Bostom, A.G.; Shemin, D.; Verhoef, P.; Nadeau, M.R.; Jacques, P.F; Selhub, J.; Dworkin, L.; and Rosenberg, I.H. Elevated fasting total plasma homocysteine levels and cardiovascular disease outcomes in maintenance dialysis patients: A prospective study. *Arteriosclerosis, Thrombosis, and Vascular Biology* 17(11):2554-2558, 1997.

48. Bostom, A.G., and Lathrop, L. Hyperhomocysteinemia in end-stage renal disease: Prevalence, etiology, and potential relationship to arteriosclerotic outcomes. *Kidney International* 52(l):10-20, 1997.

49. Bostom, A.G.; Shemin, D.; Lapane, K.L.; Sutherland, P.; Nadeau, M.R.; Wilson, P.W.; Yoburn, D.; Bausserman, L.; Tofler, G.; Jacques, P.F.; Selhub, J.; and Rosenberg, I.H. Hyperhomocysteinemia, hyperfibrinogenemia, and lipoprotein (a) excess in maintenance dialysis patients: A matched case-control study. *Arteriosclerosis* 125(l):91-101, 1996.

50. Perneger, T.V.; Klag, M.J.; and Whelton, P.K. Cause of death in patients with end-stage renal disease: Death certificates vs. registry reports. *American Journal of Public Health* 83(12):1735-1738, 1993.

51. USRDS. *1997 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, April 1997, April, 1997, Figure IV-3, 52.

52. National Kidney Foundation. Dialysis Outcomes, Quality Initiatives, Clinical Practice Guidelines, Executive Summaries. National Kidney Foundation, 1997.

53. USRDS, *1999 ADR*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and

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Digestive and Kidney Diseases, April 1999, 159.

54. Hirth, R.A.; Turenne, M.N.; Woods, J.D.; Young, E.W.; Port, F.K.; Pauly, F.K.; and Held, P.J. Vascular access in newly treated U.S. hemodialysis patients: Predictors and trends. *Journal of the American Medical Association* 276:1303-1308, 1996.

55. Soucie, M.J.; Neylan, J.F.; and McClellan, W. Race and sex differences in the identification of candidates for renal transplantation. *American Journal of Kidney Diseases* 19:414-419, 1992.

56. Kasiske, B.L.; London, W.; and Ellison, M.D. Race and socioeconomic factors influencing early placement on the kidney transplant waiting list. *Journal of the American Society of Nephrology* 9:2142-2147, 1998.

57. United Network for Organ Sharing (UNOS). 1997 Report of the Organ Procurement and Transplantation Network: Waiting List Activity and Donor Procurement, Executive Summary, Kidney Volume. Rockville, MD: Health Resources and Services Administration, 1997.

58. Ellison, M.D.; Breen, T.J.; Guo, T.G.; Cunningham, P.R.G.; and Daily, O.P. Blacks and whites on the UNOS renal waiting list: Waiting times and patient demographics compared. *Transplantation Proceedings* 25(4):2462-2466, 1993.

59. Thompson, J.S. American society of histocompatibility and immunogenetics crossmatch study. *Transplantation* 59(11):1636-1638, 1995.

60. Sanfilippo, F.P.; Vaughn, W.K.; Peters, T.G.; Shield C.F.; Adams, P.L.; Lorber, M.I.; and Williams, M. Factors affecting the waiting time of cadaveric kidney transplant candidates in the United States. *Journal of the American Medical Association* 267:247-252, 1992.

61. McCauley, J.; Irish, W.; Thompson, L.; Stevenson, J.; Lockett, R.; Bussard, R.; and Washington, M. Factors determining the rate of referral, transplantation, and survival on dialysis in women with ESRD. *American Journal of Kidney Diseases* 30:739-748, 1997.

5

Diabetes

Co-Lead Agencies: Centers for Disease Control and Prevention;
National Institutes of Health

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Goal

Through prevention programs, reduce the disease and economic burden of diabetes, and improve the quality of life for all persons who have or are at risk for diabetes.

Overview

Diabetes poses a significant public health challenge for the United States. Some 800,000 new cases are diagnosed each year, or 2,200 per day.[1,2] The changing demographic patterns in the United States are expected to increase the number of people who are at risk for diabetes and who eventually develop the disease. Diabetes is a chronic disease that usually manifests itself as one of two major types: type 1, mainly occurring in children and adolescents 18 years and younger, in which the body does not produce insulin and thus insulin administration is required to sustain life; or type 2 occurring usually in adults over 30 years of age in which the body's tissues become unable to use its own limited amount of insulin effectively. While all persons with diabetes require self-management training, treatment for type 2 diabetes usually consists of a combination of physical activity, proper nutrition, oral tablets and insulin. Type 1 diabetes has been sometimes referred to as juvenile or insulin-dependent diabetes; and type 2 diabetes has been referred to as adult-onset or noninsulin dependent diabetes.

Issues

The occurrence of diabetes, especially type 2 diabetes, as well as associated diabetes complications, is increasing in the United States.[1,2,3] The number of persons with diabetes has increased steadily over the past decade; presently, 10.5 million persons have been diagnosed with diabetes, while 5.5 million persons are estimated to have the disease but are undiagnosed. This increase in the number of cases of diabetes has occurred particularly within certain racial and ethnic groups.[4] Over the past decade, diabetes has remained the seventh leading cause of death in the United States, primarily from diabetes-associated cardiovascular disease. While premenopausal nondiabetic women usually are at less risk of cardiovascular disease than men, the presence of diabetes in women is associated with a three- to four-fold increase in coronary heart disease compared to nondiabetic females.[5] In the United States, diabetes is the leading cause of nontraumatic amputations (approximately 57,000 per year or 150 per day); blindness among working-age adults (approximately 20,000 per year or 60 per day); and end-stage renal disease (ESRD) (approximately 28,000 per year or 70 per day).[6] (See Focus Area 28. Vision and Hearing and Focus Area 4. Chronic Kidney Disease.)

These and other health problems associated with diabetes contribute to an impaired quality of life and substantial disability among people with diabetes.[7]

Diabetes is a costly disease; estimates of the total attributable cost of diabetes are around $100 billion ($43 billion direct; $45 billion indirect).[8,9] Hospitalizations for diabetes-associated cardiovascular disease account for the largest component of the direct costs. However, diabetes management is occurring increasingly in the outpatient setting, and more people with diabetes are using nursing home facilities.[8,9]

Diabetes is a major clinical and public health challenge within certain racial and ethnic groups where both new cases of diabetes and the risk of associated complications are great.[4,10]

These realities are especially disturbing given the validated efficacy and economic benefits of secondary prevention (controlling glucose, lipid, and blood pressure levels) and tertiary prevention (screening for early diabetes complications [eye, foot, and kidney abnormalities], followed by appropriate treatment and prevention strategies).[11,12,13,14,15,16,17] For many reasons, however, these scientifically and economically justified prevention programs are not used routinely in daily clinical management of persons with diabetes.[18,19,20] Diabetes is thus a "wasteful" disease. Strategies that would lessen the burden of this disease are not used regularly, resulting in unnecessary illness, disability, death, and expense.

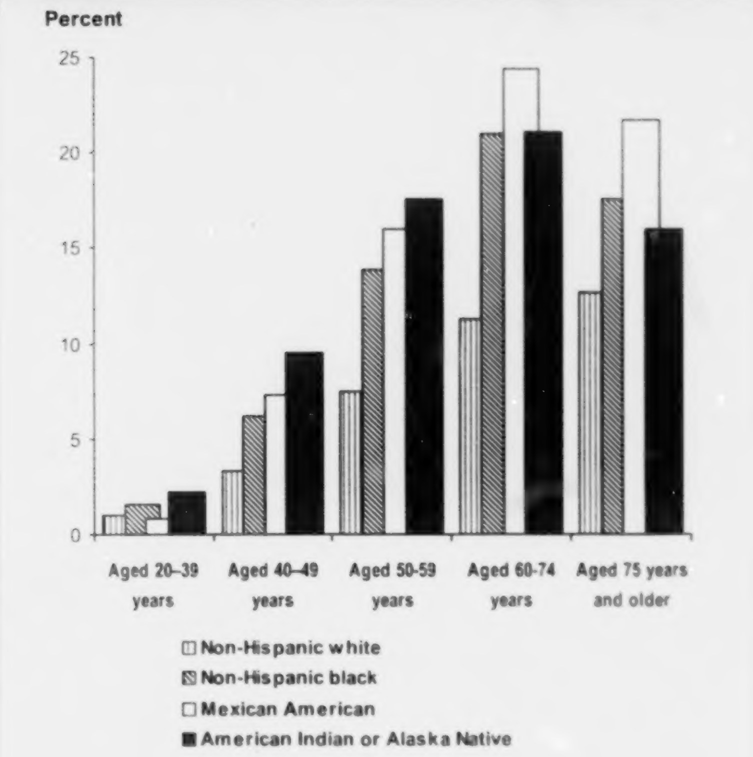
Trends

The toll of diabetes on the health status of people in the United States is expected to worsen before it improves, especially in vulnerable, high-risk populations—African Americans, Hispanics, American Indians or Alaska Natives, Asians or other Pacific Islanders, elderly persons, and economically disadvantaged persons. Several factors account for this chronic disease epidemic, including behavioral elements (improper nutrition, for example, increased fat consumption; decreased physical activity; obesity); demographic changes (aging, increased growth of "at-risk populations"); improved ascertainment and surveillance systems that more completely capture the actual burden of diabetes; and the relative weakness of interventions to change individual, community, or organizational behaviors.[1,3,7,21] Several other interrelated factors influence the present and future burden of diabetes, including genetics, cultural and community traditions, and socioeconomic status. In addition, unanticipated scientific breakthroughs, the characteristics of the health care system, and the level of patient knowledge and empowerment all have a great impact on the amount of disease burden associated with diabetes.

Personal behaviors. "Westernization," which includes a diet high in fat and processed foods as well as total calories, has been associated with a greater number of overweight persons in the United States when compared to a decade ago, especially within certain racial and ethnic groups, for example, African-American females.[22,23] Obesity, improper nutrition (including increased ingestion of fats and processed foods), and lack of physical activity are occurring in persons under age 15 years. These behaviors and conditions may explain the increasing diagnosis of type 2 diabetes in teenagers.[24, 25] Increased television watching associated with diminished physical activity also may contribute to the emergence of type 2 diabetes in youth.[24, 25, 26, 27]

Demographics. Diabetes is most common in persons over age 60 years.[28] Increased insulin resistance and gradual deterioration in the function of insulin-producing cells may account for this phenomenon. As the population in the United States ages, especially as the number of persons who are 60 years and older grows, an increase in the number of people with diabetes is expected. While studies indicate that aging itself may not be a major factor in the substantial increase in the number of persons with diabetes,[21] present and future prevention strategies for diabetes will be associated with a greater lifespan for persons with diabetes.[20]

Proportion of the Population Aged 20 Years and Older With Diabetes
(By age group and race/ethnicity, United States, 1988–94)



Sources: Harris et al. *Diabetes Care* 21(4):518–24, 1998; Indian Health Service national outpatient database.

Other changes in the U.S. population can be expected to affect the number of persons with diabetes. By 2050, almost half of the population will be other than white

(53 percent white; 24 percent Hispanic; 14 percent African American; and 8 percent Asian).[30] Because these racial and ethnic groups are at greater risk for diabetes and associated complications, and because of rising levels of obesity and physical inactivity in the general population, the number of persons with diabetes is expected to increase into the first few decades of the 21st century.[31]

Ascertainment. Known as the "hidden" disease, diabetes is undiagnosed in an estimated 5 million persons.[32, 33] In addition, complications and health services associated with diabetes frequently are not recorded on death certificates,[34, 35] hospital discharge forms,[36] emergency department paperwork, and other documents. Much of this "missing" burden of diabetes now is being captured due to improved surveillance and data systems,[37] including boxes on data forms to indicate the presence of diabetes and screening programs for undiagnosed diabetes in high-risk persons.[32] Thus, the real—but previously undocumented—burden of diabetes is becoming better recognized.

Limitations in programs to change behaviors. Scientific evidence indicates that secondary and tertiary prevention programs are effective in reducing the burden of diabetes. Yet changing the behaviors of persons with diabetes, health care providers, or other individuals or organizations involved in diabetes health care (for example, health maintenance organizations and employers), is difficult. Although many factors account for these challenges,[37] more effective interventions will need to be developed and implemented to improve the practice of diabetes care. Several other factors influence the present and future burden of diabetes, including genetics, culture, socioeconomic status (SES), scientific discoveries, and the characteristics of both chronic diseases and the health care system.

Both type 1 and type 2 diabetes have a significant genetic component.[38, 39] For type 1 diabetes, genetic markers that indicate a greater risk for this condition have been identified; they are sensitive but not specific. Type 2 diabetes, especially in vulnerable racial and ethnic groups, may be associated with a "thrifty gene."[40, 41] Family and twin studies demonstrate considerable influence of genetics for type 2 diabetes, but a specific genetic marker for the common variety of type 2 diabetes has not been identified. The degree to which such genetic indicators can be both validated and clinically available will determine effectiveness of primary prevention trials.[42, 43]

Patient behaviors are influenced by beliefs and attitudes, and these are greatly affected by community and cultural traditions.[44, 45] In many racial and ethnic communities, fatalism, use of alternative medicine, desirability of rural living conditions, lack of economic resources, and other factors will influence significantly both availability of health care and the capabilities of persons with diabetes in handling their own care. Thirteen percent of the total U.S. population speak a language at home other than English. Cultural and linguistic factors affect interactions with health care providers and the system. The degree to which diabetes prevention strategies recognize and incorporate these traditions will largely determine program effectiveness.[46, 47]

The public health and medical communities are increasingly recognizing the influence of SES in the occurrence of new cases and progression of chronic diseases.[48, 49, 50] Chronic diseases, such as diabetes, reflect the social fabric of our society, and the degree to which employment, financial security, feelings of safety, education, and the availability of health care are addressed and improved within the United States will influence the likelihood of developing type 2 diabetes, as well as effectively managing both types of diabetes.[51] For example, unemployment without access to health insurance will substantially limit attention to and expenditures for preventive health practices.

Because acute infectious diseases were the dominant health threats during the first half of the 20th century, a dichotomous view of health existed, for example, people were either alive or dead, vaccinated or not vaccinated, etc. Death and length of life were the most important markers of disease burden and program effectiveness during those years. Chronic diseases such as diabetes pose different challenges because qualitative terms such as "doing better" are valid indicators of health improvement, as are measures of quality of life and disability. Further, a variety of nonphysician health professionals (for example, nurses or pharmacists) and nonhealth care professionals (for example, faith or community leaders, employers) can be involved in critical decisions affecting chronic diseases. Diabetes, like other chronic conditions, is long term and is affected by the environment where people live, work, and play. For diseases like diabetes, the accurate measurement of quality of life as an indicator of program effectiveness and the incorporation of nonhealth professionals at work or worship on the health team will influence the successes of preventive treatment programs.[37, 45, 46]

The rapidity and utility of scientific discoveries also will influence the control of the diabetes burden. In all aspects of scientific investigation, important observations about diabetes will continue to occur. These scientific results will greatly influence diabetes prevention and management,[54] but any scientific study that is not translated and used in daily practice is ultimately "wasted."[10, 55]

The availability of a responsive and effective health care system will determine access to quality care, especially in secondary and tertiary prevention.[56, 57] With the emergence of managed care, a person with diabetes theoretically could receive effective, economical, and planned preventive care that would minimize the diabetes burden.[58] Several additional changes need to occur within the managed care setting, however, to maximize fully this theoretical opportunity for persons with diabetes, including managed care (1) not denying access to potentially expensive patients, (2) allowing adequate time for health professionals to interact with patients, and (3) ensuring patient protection rights.

In addition, the apparent movement toward primary care will affect diabetes management and outcomes. At present, about 90 percent of all persons with diabetes receive continuous care from the primary care community. This is highly unlikely to change. Thus, the degree that improved relationships can be established between diabetes specialists and primary care health providers will determine the quality of diabetes care.[59]

People with diabetes spend a small percentage of their time in contact with health professionals. In addition to family, friends, and work colleagues, individual patient knowledge, beliefs, and attitudes affect diabetes management and outcomes. The ability to understand and influence individual, community, and organizational behaviors will influence significantly the success of preventive programs in diabetes.[60, 61, 62]

Disparities

Gaps exist among racial and ethnic groups in the rate of diabetes and its associated complications in the United States. Racial and ethnic communities, including African Americans, Hispanics, American Indians, and certain Pacific Islander and Asian American populations as well as economically disadvantaged or older Americans, suffer disproportionately compared to white populations. For example, the relative number of persons with diabetes in African American, Hispanic, and American Indian communities is one to five times greater than in white communities.[4] When compared to their white counterparts, death from diabetes is two times as great in African-American persons, and diabetes-associated renal failure is two and a half times that in Hispanic individuals with diabetes.[1, 6, 7]

Particularly within certain racial and ethnic groups, there are four potential individual reasons for the greater burden of diabetes:

Greater number of cases of diabetes. If diabetes is more common, then more amputations, death, and other complications from diabetes would be expected.

Greater seriousness of diabetes. If hyperglycemia or other serious comorbid conditions, such as high blood pressure or elevated blood lipids, are present in certain racial and ethnic groups, a greater diabetes-related disease burden would occur. Many other factors could be involved, including genetics and excess weight. "Greater seriousness" of diabetes can be determined by comparing, for example, death or amputation rates for specific racial and ethnic diabetic groups with those rates in the general diabetes population.

Inadequate access to proper diabetes prevention and control programs. If diabetes services, such as self-management training programs or eye-retina examinations, are not a part of routine diabetes care, then effective programs to reduce the burden of diabetes will not be accessed and used. These essential diabetes services often are provided by specialists. Unfortunately, many diabetes "at-risk" groups reside in medically undeserved areas or are without adequate insurance, and thus do not receive these types of preventive services.

Improper quality of care. If diabetes management services are available, but the quality of that service is inadequate, prevention programs would not be effective in reducing the burden of diabetes.

Identifying the reasons for disparities in diabetes health outcomes is important in tailoring programs to those specific areas where deficiencies exist. Collection of racial and ethnic health services data for all health activities is critical to designate the reason for the greater disease burden.

Opportunities

Opportunities to meet the challenges of diabetes lie in four "transition points" in the natural history of this disease and the preventive interventions which target them: primary prevention, screening and early diagnosis, access, and quality of care (secondary and tertiary prevention).[63]

The transition points and associated public health intervention are as follows:

- Transition Point 1: From No Diabetes to Diabetes Present (although not recognized). Intervention, *Primary Prevention.*
- Transition Point 2: From Diabetes Not Recognized to Diabetes Recognized (but preventive diabetes care not provided). Intervention, *Screening Early Diagnosis.*
- Transition Point 3: From No Care to Diabetes Care Applied. Intervention, *Access.*
- Transition Point 4: From Improper Care to Proper Care. Intervention, *Quality of Care.* (Secondary and Tertiary Prevention—for example, glucose control and decreasing diabetes complications.)

Each transition point represents a diabetes prevention and control opportunity that is contained in the diabetes objectives of Healthy People 2010. Objectives are categorized as: (1) diabetes education; (2) burden of disease (new cases, existing cases, undiagnosed diabetes, death, pregnancy complications); (3) macrovascular, microvascular, and metabolic complications; (4) laboratory services (lipids, glycosylated hemoglobin, microalbumin measurements); (5) health provider services (eye, foot, and dental examinations); and (6) patient protection behaviors (aspirin, self-glucose monitoring). These objectives measure both the processes and outcomes of preventive diabetes programs.

To improve the quality of diabetes care, the Diabetes Quality Improvement Project (DQIP)—a joint public/private effort—has identified a set of measures to track critical performance measures of diabetes management. Through the Quality Interagency Coordination (QuIC) task force, Federal agencies with health care responsibilities are collaborating to use DQIP to better focus efforts to improve diabetes care.

Interim Progress Toward Year 2000 Objectives

In Healthy People 2000, five diabetes-related objectives were included in a group of objectives addressing chronic conditions linked by their potential impact on quality of life and disability. Of these five objectives, eye examinations is moving toward the 2000 target. Death from diabetes, nonretinal diabetes complications, new cases of diabetes, and the number of existing cases are all moving away from the 2000 targets. Diabetes education is increasing in frequency among persons with diabetes.

These changes in direction need to be considered carefully with regard to significance, causes, and implications. The greater number of new cases of ESRD among persons with diabetes may in part be due to "ascertainment," that is persons with diabetes were not in the past but now are allowed access to ESRD treatment programs. Similarly, while new cases of type 2 diabetes truly may be increasing in association with obesity and inactivity, a higher number of cases of diabetes also may reflect increased efforts to screen for previously undiagnosed diabetes as well as decreased deaths from such conditions as diabetic acidosis or amputations. Thus, an increased number of existing cases of type 2 diabetes may in part reflect successes in other types of diabetes prevention programs.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Diabetes

Goal: Through prevention programs, reduce the disease and economic burden of diabetes, and improve the quality of life for all persons who have or are at risk for diabetes.

Number	Objective
5-1	Diabetes education
5-2	Prevent diabetes
5-3	Reduce diabetes
5-4	Diagnosis of diabetes
5-5	Diabetes deaths
5-6	Diabetes-related deaths
5-7	Cardiovascular deaths in persons with diabetes
5-8	Gestational diabetes
5-9	Foot ulcers
5-10	Lower extremity amputations
5-11	Annual urinary microalbumin measurement
5-12	Annual glycosylated hemoglobin measurement
5-13	Annual dilated eye examinations
5-14	Annual foot examinations
5-15	Annual dental examinations
5-16	Aspirin therapy
5-17	Self-blood glucose monitoring

5-1. Increase the proportion of persons with diabetes who receive formal diabetes education.

Target: 60 percent.

Baseline: 40 percent of persons with diabetes received formal diabetes education in 1998 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Persons With Diabetes, 1993*	Diabetes Education Percent
TOTAL	45
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	55
White	42
Hispanic or Latino	DSU
Not Hispanic or Latino	48
Black or African American	45
White	57
Gender	
Female	49
Male	41
Age	
Under 18 years	DNC
18 to 44 years	48
45 to 64 years	44
65 to 74 years	41
75 years and older	36

Persons With Diabetes, 1993*	**Diabetes Education** Percent
Education level (aged 25 years and older)	
Less than high school	46
High school graduate	39
At least some college	51
Disability status	
Persons with activity limitation	48
Persons without activity limitations	43
Geographic location	
Urban	47
Rural	42

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Diabetes patient education is uniformly viewed as effective and economical in the ultimate prevention of long term complications from diabetes. An individual with diabetes spends less than one percent of his or her time in contact with the health care system and on a daily basis must make a variety of critical decisions about diabetes. An informed and motivated patient is essential in managing the disease and reducing the risk of complications (for example, foot ulcers, hypoglycemia, and hypertension).[64, 65]

5-2. Prevent diabetes.

Target: 2.5 new cases per 1,000 persons per year.

Baseline: 3.1 new cases of diabetes per 1,000 persons (3-year average) in 1994-96.

Target setting method: Better than the best (retain year 2000 target).

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Total Population, 1994–96	**New Cases of Diabetes** Rate per 1,000
TOTAL	3.1
Race and ethnicity	
American Indian or Alaska Native	8.7
Asian or Pacific Islander	2.9

Total Population, 1994–96	**New Cases of Diabetes** Rate per 1,000
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	3.7
White	3.0
Hispanic or Latino	3.5
Not Hispanic or Latino	3.1
Black or African American	3.8
White	2.9
Gender	
Female	3.7
Male	2.6
Age	
Under 18 years	DNA
18 to 44 years	DNA
45 to 64 years	6.5
65 to 74 years	DNA
75 years and older	DNA
Education level (aged 25 years and older)	
Less than high school	7.7
High school graduate	4.0
At least some college	3.8
Geographic location	
Urban	DNA
Rural	DNA
Disability status	
Persons with activity limitations	DNA
Persons without activity limitations	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

5-3. Reduce the overall rate of diabetes that is clinically diagnosed.

Target: 25 overall cases per 1,000 population.

Baseline: 40 overall cases (including new and existing cases) of diabetes per 1,000 population in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best (retain year 2000 target).

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Total Population, 1997	**Cases of Diagnosed Diabetes** Rate per 1,000
TOTAL	40
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	74
White	36
Hispanic or Latino	61
Not Hispanic or Latino	38
Black or African American	74
White	34
Gender	
Female	40
Male	39
Age	
Under 18 years	DSU
18 to 44 years	15
45 to 64 years	76
65 to 74 years	143
75 years and older	117
Education level (aged 25 years and older)	
Less than high school	95
High school graduate	58
At least some college	44

Total Population, 1997	Cases of Diagnosed Diabetes Rate per 1,000
Geographic location	
Urban	40
Rural	38
Disability status	
Persons with disabilities	87
Persons without disabilities	28

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

5-4. Increase the proportion of adults with diabetes whose condition has been diagnosed.

Target: 80 percent.

Baseline: 65 percent of adults aged 20 years and older with diabetes had been diagnosed in 1988-94.

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 20 Years and Older With Diabetes, 1988–94	Persons Whose Diabetes Has Been Diagnosed Percent
TOTAL	65
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA
White	DNA
Hispanic or Latino	DNA
Mexican American	62

Adults Aged 20 Years and Older With Diabetes, 1988–94	**Persons Whose Diabetes Has Been Diagnosed** Percent
Not Hispanic or Latino	DNA
Black or African American	66
White	67
Gender	
Female	68
Male	61
Age	
20 to 44 years	67
45 to 64 years	61
65 to 74 years	69
75 years and older	69
Education level (aged 25 years and older)	
Less than high school	DNA
High school graduate	DNA
At least some college	DNA
Geographic location	
Urban	DNA
Rural	DNA
Disability status	
Persons with disabilities	DNA
Persons without disabilities	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Diabetes is increasingly common in the United States and the world. Many factors could be contributing to this "chronic disease epidemic," including an increase in new cases, a decrease in deaths, and improvements in detection.[1, 2, 3, 21, 61] Given the seriousness and cost associated with diabetes and the complexities of the disease, factors that account for the increasing frequency of diabetes should be identified.[66, 67, 68, 69]

5-5. Reduce the diabetes death rate.

Target: 45 deaths per 100,000 persons.

Baseline: 75 deaths per 100,000 persons were related to diabetes in 1997 (age adjusted to the year 2000 standard population).

Target setting method: 43 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997	**Diabetes Deaths** Rate per 100,000
TOTAL	75
Race and ethnicity	
American Indian or Alaska Native	107
Asian or Pacific Islander	62
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	130
White	70
Hispanic or Latino	86
Mexican American	115
Puerto Rican	87
Cuban	39
Not Hispanic or Latino	74
Black or African American	133
White	68
Gender	
Female	67
Male	87
Age	
Under 45 years	3
45 to 64 years	64
65 to 74 years	281
75 years and older	673
Education level (aged 25 to 64 years)	
Less than high school	48
High school graduate	38
At least some college	17

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.

5-6. Reduce diabetes-related deaths among persons with diabetes.

Target: 7.8 deaths per 1,000 persons with diabetes.

Baseline: 8.8 deaths per 1,000 persons with diabetes listed anywhere on the death certificate in 1997 (age adjusted to the year 2000 standard population).

Target setting method: 11 percent improvement.

Data sources: National Vital Statistics System (NVSS), CDC, NCHS; National Health Interview Survey (NHIS), CDC, NCHS.

Persons With Diabetes, 1997	Diabetes-Related Deaths Rate per 1,000
TOTAL	8.8
Race and ethnicity	
American Indian or Alaska Native	3.3
Asian or Pacific Islander	5.4
Asian	6.3
Native Hawaiian and other Pacific Islander	2.5
Black or African American	8.1
White	8.9
Hispanic or Latino	7.4
Not Hispanic or Latino	8.9
Black or African American	8.1
White	9.0
Gender	
Female	8.6
Male	9.5
Age	
Under 45 years	2.0
45 to 64 years	7.7
65 to 74 years	20.1
75 years and older	73.4

Persons With Diabetes, 1997	Diabetes-Related Deaths Rate per 1,000
Education level (aged 25 to 64 years)	
Less than high school	4.7
High school graduate	7.3
At least some college	3.4

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.

5-7. Reduce deaths from cardiovascular disease in persons with diabetes.

Target: 309 deaths per 100,000 persons with diabetes.

Baseline: 343 deaths from cardiovascular disease per 100,000 persons with diabetes in 1997 (age adjusted to the year 2000 standard population).

Target setting method: 10 percent improvement.

Data sources: National Vital Statistics System (NVSS), CDC, NCHS; National Health Interview Survey (NHIS), CDC, NCHS.

Persons With Diabetes, 1997	Cardiovascular Disease Deaths Rate per 100,000
TOTAL	343
Race and ethnicity	
American Indian or Alaska Native	93
Asian or Pacific Islander	223
Asian	263
Native Hawaiian and other Pacific Islander	113
Black or African American	283
White	359
Hispanic or Latino	270
Not Hispanic or Latino	351
Black or African American	284
White	367

Persons With Diabetes, 1997	Cardiovascular Disease Deaths Rate per 100,000
Gender	
Female	339
Male	363
Age	
Under age 45 years	38
45 to 64 years	306
65 to 74 years	850
75 years and older	3,222
Education level (aged 25 to 64 years)	
Less than high school	145
High school graduate	247
At least some college	125

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Persons with diabetes experience death rates two to four times greater than nondiabetic persons, especially from cardiovascular disease. Other causes of death include renal failure, diabetic acidosis, and infection. Studies have clearly indicated that secondary prevention[70 71 72 73] and tertiary prevention[74 75 76 77] can reduce overall cardiac-related illness, disability, and death. Death rates and their significance, however, are complicated by how accurately and completely diabetes is recorded on death certificates.[34 35] Thus, attention to both prevention behaviors to delay or prevent death, as well as death rates themselves, should be examined carefully.[70 71 72 73 74 75 76 77 78 79 80 81]

5-8. (Developmental) Decrease the proportion of pregnant women with gestational diabetes.

Potential data source: National Vital Statistics System (NVSS), CDC, NCHS.

Studies of diabetes and pregnancy are consistent in their conclusions that proper prepregnancy and pregnancy glycemia control and careful perinatal obstetrical monitoring are associated with reduction in perinatal death and congenital abnormalities. More recently, the importance of good fetal and neonatal nutrition in general, as well as in persons with diabetes, has been emphasized.[82 83 84 85 86 87]

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5-9. (Developmental) Reduce the frequency of foot ulcers in persons with diabetes.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

5-10. Reduce the rate of lower extremity amputations in persons with diabetes.

Target: 5 per 1,000 persons with diabetes per year.

Baseline: 11 lower extremity amputations per 1,000 persons with diabetes in 1996.

Target setting method: 55 percent improvement.

Data sources: National Hospital Discharge Survey (NHDS), CDC, NCHS; National Health Interview Survey (NHIS), CDC, NCHS.

Persons With Diabetes, 1996	**Lower Extremity Amputation** Rate per 1,000
TOTAL	11
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	10
White	DNA
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	DNA
Male	DNA
Age	
Under 65 years	DNA
65 to 74 years	DNA
75 years and older	DNA

Persons With Diabetes, 1996	**Lower Extremity Amputation** Rate per 1,000
Education level (aged 25 years and older)	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

5-11. (Developmental) Increase the proportion of persons with diabetes who obtain an annual urinary microalbumin measurement.

Potential data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

Scientific evidence documents that with secondary and tertiary prevention, microvascular complications of diabetes can be substantially reduced. Improved quality of life, decreased death rates, and reduced costs all can result from improved clinical and public health diabetes prevention strategies directed at microvascular and metabolic complications from diabetes. Monitoring the consequences of these strategies through reductions in mid- and end-stage microvascular complications needs to be an important component in determining the effectiveness of national diabetes activities. In both type 1 and 2 diabetes, evidence is now firmly established that microvascular and metabolic complications of diabetes can be prevented through secondary (glucose[88, 89]) and tertiary (screening and early treatment of complications[90]) prevention strategies.[91, 92, 93, 94]

Improper nutrition, obesity, and inactivity appear to be significant risk factors for the development of type 2 diabetes. (See Focus Area 22. Physical Activity and Fitness, and Focus Area 19. Nutrition and Overweight.) In addition, nutrition, weight, and physical activity components are particularly critical in both glucose management and blood pressure and lipid control in persons with diabetes. These components are closely related to abilities to control both micro- and macrovascular diabetic complications. Given the discouraging trends in obesity and physical inactivity, these elements should be particularly and carefully monitored in persons with diabetes.[95, 96, 97]

5-12. Increase the proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least once a year.

Target: 50 percent.

Baseline: 24 percent of adults aged 18 years and older with diabetes had a glycosylated hemoglobin measurement at least once a year (mean of data from 39 States in 1998; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

Adults Aged 18 Years and Older With Diabetes, 1998	Annual Glycosylated Hemoglobin Assessment Percent
TOTAL	24
Race and ethnicity	
American Indian or Alaska Native	29
Asian or Pacific Islander	48
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	21
White	25
Hispanic or Latino	22
Not Hispanic or Latino	25
Black or African American	21
White	24
Gender	
Female	24
Male	25
Education level (aged 25 years and older)	
Less than high school	13
High school graduate	19
At least some college	31

Adults Aged 18 Years and Older With Diabetes, 1998	Annual Glycosylated Hemoglobin Assessment
	Percent
Age	
18 to 44 years	29
45 to 64 years	23
65 to 74 years	13
75 years and older	11

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

During the past decade, scientific investigations have established that controlling certain macrovascular risk factors, such as elevated blood lipids and blood pressure, as well as microvascular factors, such as elevated blood glucose, will result in fewer diabetes-related complications. Further, identification of early indicators of organ damage, for example, microalbuminuria, and proper treatment with angiotensin-converting enzyme-inhibitors, will reduce progression to renal failure. Diabetes-associated complications can be detected with available laboratory and clinical measures, thus indicating the need for prevention programs. Monitoring these clinical and laboratory measures can serve to identify targets for intervention programs.[98, 99, 100, 101, 102]

5-13. Increase the proportion of adults with diabetes who have an annual dilated eye examination.

Target: 75 percent.

Baseline: 56 percent of adults aged 18 years and older with diabetes had an annual dilated eye examination (mean of data from 39 States in 1998; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

Adults Aged 18 Years and Older With Diabetes, 1998	Annual Dilated Eye Examination
	Percent
TOTAL	56
Race and ethnicity	
American Indian or Alaska Native	60
Asian or Pacific Islander	69
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	59
White	55
Hispanic or Latino	53
Not Hispanic or Latino	57
Black or African American	59
White	56
Gender	
Female	55
Male	58
Education level (aged 25 years and older)	
Less than high school	48
High school graduate	60
At least some college	58
Age	
18 to 44 years	51
45 to 64 years	61
65 to 74 years	65
75 years and older	65

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

5-14. Increase the proportion of adults with diabetes who have at least an annual foot examination.

Target: 75 percent.

Baseline: 55 percent of adults aged 18 years and older with diabetes had at least an annual foot examination (mean value of data from 39 States in 1998; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

Adults Aged 18 Years and Older With Diabetes, 1998	**Annual Foot Examination** Percent
TOTAL	55
Race and ethnicity	
American Indian or Alaska Native	40
Asian or Pacific Islander	57
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	55
White	55
Hispanic or Latino	56
Not Hispanic or Latino	54
Black or African American	54
White	54
Gender	
Female	51
Male	59
Age	
18 to 44 years	53
45 to 64 years	59
65 to 74 years	56
75 years and older	51
Education level (aged 25 years and older)	
Less than high school	46
High school graduate	56
At least some college	59

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.

Health practitioner behaviors, such as blood pressure monitoring or eye and foot examinations, are associated with greater identification of early indicators of end-organ damage from diabetes. These screening behaviors are necessary to initiate secondary and tertiary prevention programs, and should be monitored.[103, 104, 105]

5-15. Increase the proportion of persons with diabetes who have at least an annual dental examination.

Target: 75 percent.

Baseline: 58 percent of persons aged 2 years and older with diagnosed diabetes saw a dentist at least once within the preceding 12 months in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Persons with Diabetes Aged 2 Years and Older, 1997	Annual Dental Examination Percent
TOTAL	58
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	56
Asian	DSU
Native Hawaiian or Pacific Islander	DSU
Black or African American	63
White	58
Hispanic or Latino	32
Not Hispanic or Latino	61
Black or African American	63
White	61
Gender	
Female	59
Male	57
Age	
18 to 44 years	64
45 to 64 years	68
65 to 74 years	68
75 years and older	65
Education level (aged 25 years and older)	
Less than high school	40
High school graduate	52
At least some college	65

Persons with Diabetes Aged 2 Years and Older, 1997	Annual Dental Examination Percent
Disability status	
Persons with disabilities	42
Persons without disabilities	66

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Persons with diabetes are at increased risk for destructive periodontitis and subsequent tooth loss. [106, 107] In addition, untreated periodontitis in persons with diabetes may complicate glycemic control.[108] Regular dental visits provide opportunities for prevention, early detection, and treatment of periodontal problems in persons with diabetes.

5-16. Increase the proportion of adults with diabetes who take aspirin at least 15 times per month.

Target: 30 percent.

Baseline: 20 percent of adults with diabetes aged 40 years and older took aspirin at least 15 times per month in 1988-94.

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 40 Years and Older With Diabetes, 1988–94	Take Aspirin at Least 15 Times per Month Percent
TOTAL	20
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	9
White	24
Hispanic or Latino	DSU
Mexican American	8

Adults Aged 40 Years and Older With Diabetes, 1988–94	Take Aspirin at Least 15 Times per Month Percent
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	19
Male	21
Education level	
Less than high school	18
High school graduate	23
At least some college	19

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

5-17. Increase the proportion of adults with diabetes who perform self-blood glucose monitoring at least once daily.

Target: 60 percent.

Baseline: 42 percent of adults aged 18 years and older with diabetes performed self-blood glucose monitoring at least once daily (mean of data from 39 States in 1998; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

Adults Aged 18 Years and Older With Diabetes, 1998	Daily Self-Blood Glucose Monitoring Percent
TOTAL	42
Race and ethnicity	
American Indian or Alaska Native	53
Asian or Pacific Islander	30
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	40
White	43

Adults Aged 18 Years and Older With Diabetes, 1998	**Daily Self-Blood Glucose Monitoring** Percent
Hispanic or Latino	36
Not Hispanic or Latino	43
Black or African American	37
White	45
Gender	
Female	43
Male	41
Age	
25 to 44 years	43
45 to 64 years	41
65 to 74 years	44
75 years and older	38
Education level (aged 25 years and older)	
Less than high school	38
High school graduate	41
At least some college	44

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Certain activities, ultimately chosen by the patients themselves, are essential in the proper preventive management of diabetes. Smoking cessation, use of aspirin, and self-blood glucose monitoring are representative of individual behaviors that should be periodically monitored because each behavior is associated with a decreased likelihood of microvascular and macrovascular complications.[109, 110, 111, 112, 113] Aspirin therapy in persons with diabetes mellitus—especially in the presence of other cardiovascular risk factors, such as high blood pressure, elevated blood lipids, etc.—has been demonstrated to reduce the likelihood of a future heart attack or stroke.[113]

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-1. Persons with health insurance

1-2. Health insurance coverage for clinical preventive services

1-3. Counseling about health behaviors

4. Chronic Kidney Disease

4-1. End-stage renal disease

4-2. Cardiovascular disease deaths in persons with chronic kidney failure

4-7. Kidney failure due to diabetes

4-8. Medical therapy for persons with diabetes and proteinuria

9. Family Planning

9-3. Contraceptive use

9-11. Pregnancy prevention education

12. Heart Disease and Stroke

12-1. Coronary heart disease (CHD) deaths

12-2. Knowledge of symptoms of heart attack and importance of dialing 911

12-7. Stroke deaths

12-8. Knowledge of early warning symptoms of stroke

12-9. High blood pressure

12-10. High blood pressure control

12-11. Action to help control blood pressure

12-12. Blood pressure monitoring

12-13. Mean total cholesterol levels

12-14. High blood cholesterol levels

12-15. Blood cholesterol screening

12-16. LDL-cholesterol level in CHD patients

14. Immunization and Infectious Diseases

14-5. Invasive pneumococcal infections

14-29. Flu and pneumococcal vaccination of high-risk adults

16. Maternal, Infant, and Child Health

16-6. Prenatal care

16-10. Low birth weight and very low birth weight

16-19. Breastfeeding

19. Nutrition and Overweight

19-1. Healthy weight in adults

19-2. Obesity in adults

19-3. Overweight or obesity in children and adolescents

19-16. Worksite promotion of nutrition education and weight management

19-17. Nutrition counseling for medical conditions

22. Physical Activity and Fitness

22-1. No leisure-time physical activity

22-2. Moderate physical activity

22-3. Vigorous physical activity

22-6. Moderate physical activity in adolescents

22-7. Vigorous physical activity in adolescents

28. Vision and Hearing

28-1. Dilated eye exam

28-5. Impairment due to diabetic retinopathy

28-10. Vision rehabilitation services and devices

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Ascertainment: The processes and systems used to collect information and data about a particular health condition, for example, written surveys, telephone calls, electronic records, etc.

Co-morbidity: The presence of serious health conditions in addition to the one being examined, for example, high blood pressure in people with diabetes mellitus.

Diabetes mellitus (diabetes): A chronic disease due to either or both insulin deficiency and resistance to insulin action, and associated with hyperglycemia (elevated blood glucose levels). Over time, without proper preventive treatment, organ complications related to diabetes develop, including heart, nerve, foot, eye, and kidney damage; problems with pregnancy also occur. Diabetes is classified into four major categories:

Type 1 diabetes: (previously called insulin-dependent diabetes mellitus [IDDM] or juvenile-onset diabetes [JODM]) represents clinically about 5 percent of all persons with diagnosed diabetes. Its clinical onset is typically at ages under 30 years. Most often this type of diabetes represents an autoimmune destructive disease in beta (insulin-producing) cells of the pancreas in genetically susceptible individuals. Insulin therapy always is required to sustain life and maintain diabetes control.

Type 2 diabetes: (previously called non-insulin-dependent diabetes mellitus [NIDDM] or adult-onset diabetes [AODM]) is the most common form of diabetes in the United States and the world, especially in certain racial and ethnic groups and in elderly persons. In the United States, approximately 95 percent of all persons with diagnosed diabetes (10.5 million) and almost 100 percent of all persons with undiagnosed (5.5 million) diabetes probably have type 2 diabetes.

Gestational diabetes mellitus (GDM): refers to the development of hyperglycemia during pregnancy in an individual not previously known to have diabetes. Approximately 3 percent of all pregnancies are associated with GDM. GDM identifies health risks to the fetus and newborn and future diabetes in the mother and offspring.

Other types: include genetic abnormalities, pancreatic diseases, and medication use.

Complications: Microvascular—small vessel abnormalities in the eyes and kidneys; macrovascular—large vessel abnormalities in the heart, brain, and legs; and metabolic—abnormalities in nerves and during pregnancy.

Diabetic acidosis: A severe condition of diabetes. Due to a lack of insulin, the body breaks down fat tissue and converts the fat to very strong acids. The condition most often is associated with a very high blood sugar and happens most often in poorly controlled or newly diagnosed type 1 diabetes.

Direct costs: Costs associated with an illness that can be attributed to a medical service, procedure, medication, etc. Examples include payment for an x-ray; pharmaceutical drugs, for example, insulin; surgery, or a clinic visit.

Formal diabetes education: Self-management training that includes a process of initial individual patient assessment; instruction provided or supervised by a qualified health professional; evaluation of accumulation by the diabetic patient of appropriate knowledge, skills, and attitudes; and ongoing reassessment and training.

Indirect costs: Those costs associated with an illness that occur because an individual cannot work at his or her usual job due to premature death, sickness, or disability (for example, amputation).

Prevention: Primary: stopping or delaying onset of diabetes; secondary: early identification and stopping or delaying onset of complications; tertiary: stopping disability from disease and its complications.

Thrifty gene: An idea which suggests that in people likely to develop type 2 diabetes, a "thrifty gene" is present. It is speculated that thousands of years ago, people with "thrifty gene" could store food very efficiently and thus survive long periods of starvation. Now when starvation is unusual, this thrifty gene tends to make people overweight and thus prone to diabetes.

Urinary microalbumin measurement: A laboratory procedure to detect very small quantities of protein in the urine, indicating early kidney damage.

References

1. Clark, C. How should we respond to the worldwide diabetes epidemic? *Diabetes Care* 21:475-476, 1998.

2. Burke, J.; Williams, K.; Gaskill, S.; Hazuda, H.; Haffner, S.; and Stern, M. Rapid rise in the incidence of type 2 diabetes from 1987 to 1996: results from the San Antonio Heart Study. *Archives of Internal Medicine* 159:1450-1457, 1999.

3. King, H.; Aubert, R.; and Herman, H. Global burden of diabetes, 1995-2025: Prevalence, numerical estimates and projections. *Diabetes Care* 21:1414-1431, 1997.

4. Flegal, K.; Ezzati, T.; Harris, M.; Haynes, S.; Juarex, R.; Knowler, W.; Perez-Stable, E.; and Stern, M. Prevalence of diabetes in Mexican Americans, Cubans and Puerto Ricans from the Hispanic Health and Nutritional Examination Survey, 1982-1984. *Diabetes Care* 14:628-638, 1991.

5. American Diabetes Association. *Diabetes 1996: Vital Statistics*. Alexandria, VA: American Diabetes Association, 1996.

6. Centers for Disease Control and Prevention (CDC). *National Diabetes Fact Sheet: National Estimates and General Information on Diabetes in the United States*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 1999.

7. Centers for Disease Control and Prevention. *Diabetes Surveillance, 1997*. Atlanta, GA: U.S. Department of Health and Human Services, 1997.

8. American Diabetes Association. Economic consequences of diabetes mellitus in the U.S. in 1997. *Diabetes Care* 21:296-306, 1998.

9. Hodgson, T., and Cohen, A. Medical care expenditures for diabetes, its chronic complications and its comorbidities. *Preventive Medicine* 29:173-186, 1999.

10. Vinicor, F. Is diabetes a public health disorder? *Diabetes Care* 17(S1):22-27, 1994.

11. Diabetes Control and Complications Trial Research Group. The effects of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *New England Journal of Medicine* 329:977-986, 1993.

12. Gotto, A. Cholesterol management in theory and practice. *Circulation* 96:4424-4430, 1997.

13. American College of Physicians, American Diabetes Association, and Academy of Ophthalmology. Screening guidelines for diabetic retinopathy. *Annals of Internal Medicine* 116:683-685, 1992.

14. Levin, M. Diabetes and peripheral neuropathy. *Diabetes Care* 21:1, 1998.

15. Steffes, M. Diabetic nephropathy: Incidence, prevalence, and treatment. *Diabetes Care* 20:1059-1060, 1997.

16. Diabetes Control and Complications Trial Research Group. Lifetime benefits and costs of intensive therapy as practiced in the Diabetes Control and Complications Trial. *Journal of the American Medical Association* 276:1409-1415, 1996.

17. Eastman, R.; Javitt, J.; Herman, W.; Dasbach, J.; and Harris, M. Prevention strategies for non-insulin dependent diabetes mellitus: An economic perspective. In: LeRoith, D.; Taylor, S., and Olefsky, J. (eds.). *Diabetes Mellitus*. Philadelphia, PA: Lippincott-Raven Publishers, 1996, 621-630.

18. Vinicor, F. Challenges to the translation of the Diabetes Control and Complications Trial. *Diabetes Review* 2:371-383, 1994.

19. Brechner, R.; Cowie, C.; Howie, L.; Herman, W.; Will, J.; and Harris, M. Ophthalmic examination among adults with diagnosed diabetes mellitus. *Journal of the American Medical Association* 270:1714-1718, 1993.

20. Kraft, S.; Marrero, D.; Lazaridis, E.; Fineberg, N.; Qui, C.; and Clark, C. Primary care physicians' practice patterns and diabetic

retinopathy. *Archives of Family Medicine* 6:29-37, 1997.

21. CDC. Trends in the prevalence and incidence of self-reported diabetes mellitus—United States, 1980-1994. *Morbidity and Mortality Weekly Report* 46:1014-1018, 1997.

22. Kuckzmarski, R. Increasing prevalence of overweight among U.S. adults: National Health and Nutrition Examination Survey 1960-1994. *Journal of the American Medical Association* 272:205-211, 1994.

23. Christoffel, K., and Ariza, A. The epidemiology of overweight in children: Relevance for clinical care. *Pediatrics* 101:103-105, 1998.

24. Fagot-Campagna, A.; Rios Burrows, N.; and Williamson, D. The public health epidemiology of type 2 diabetes in children and adolescents: a case study of American Indian adolescents in the Southwestern United States. *Clinica Chimica Acta* 286:81-95, 1999.

25. Rosenbloom, A.; Joe, J.; Young, R.; and Winter, W. Emerging epidemic of type 2 diabetes in youth. *Diabetes Care* 22:345-354, 1999.

26. U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General.* Atlanta, GA: the Department, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.

27. Dietz, W. Critical periods in childhood for the development of obesity. *American Journal of Clinical Nutrition* 59:955-959, 1994.

28. Vita, A.; Terry, R.; Hubert, H.; and Fries, J. Aging, health risk and cumulative disability. *New England Journal of Medicine* 338:1035-1041, 1998.

29. Herman, W.; Thompson, T.; Visscher, W.; Aubert, R.; Engelgau, M.; Liburd, L.; Watson, D.; and Hartwell, T. Diabetes mellitus and its complications in an African American community: Project DIRECT. *Journal of the National Medical Association* 90:147-156, 1998.

30. Pollard, K., and O'Hare, W. American's racial and ethnic minorities. *Population Bulletin* 54:1-48, 1999.

31. Pearce, D.; Griffin, T.; Kelly, J.; and Mikkelsen, L. An overview of the population in Europe and North America. *Population Trends* 89:24-36, 1997.

32. Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Report of the expert committee on the diagnosis and classification of diabetes mellitus. *Diabetes Care* 20:1183-1197, 1997.

33. Eastman, R., and Vinicor, F. Science: Moving us in the right direction. *Diabetes Care* 20(7):1057-1058, 1997.

34. Bild, D., and Stevenson, J. Frequency of recording of diabetes on U.S. death certificates: Analysis of the 1986 National Mortality Follow Back Survey. *Journal of Clinical Epidemiology* 454:275-281, 1992.

35. Vinicor, F., and Will, J. The grim reaper and diabetes mellitus (DM): do we know how often (s)he strikes? *Diabetes* 48:A170, 1999.

36. Levatan, C.; Passaro, M.; Jablonski, K.; Kass, M.; and Ratner, R. Unrecognized diabetes among hospitalized patients. *Diabetes Care* 21:246-249, 1998.

37. Glasgow, R.; Wagner, E.; Kaplan, R.; Vinicor, F.; Smith, L.; and Norman, J. If diabetes is a public health problem, who not treat it as one? A population-based approach to chronic illness. *Annals of Behavioral Medicine* 21:159-170, 1999.

38. Pozzilli, P. Prevention of insulin-dependent diabetes. *Diabetes Metabolism Review* 12:27-136, 1996.

39. O'Rahilly, S. Diabetes in midlife: Planting genetic time bombs. *Nature Medicine* 3:1080-1081, 1997.

40. Neel, J. At mid-point in the molecular revolution. *Bioessays* 18:943-944, 1996.

41. Swinburn, B. The thrifty genotype hypothesis: how does it look after 30 years? *Diabetes Medicine* 13:695-699, 1996.

42. DPT I Study Group. The diabetes prevention trial: Type 1 diabetes (DPT1). Implementation of screening and staging of relatives. *Transplant Process* 27:3377, 1995.

43. National Institutes of Health. Non-insulin dependent diabetes primary prevention trial. *NIH Guide to Grants and Contracts* 22:1-20, 1993.

44. Sussman, L. Sociocultural concerns of diabetes mellitus. In: Haire-Joshua, D. (ed.). *Management of Diabetes Mellitus: Perspectives of Care Across the Life Span*, 2nd Edition. St. Louis, MO: Mosby, 1996, 473-512.

45. Hahn, R. *Sickness and Healing: An Anthropologic Perspective.* New Haven, CT: Yale University Press, 1995.

46. Resnicow, K.; Baranowski, T.; Ahluwalia, J.; and Braithwaite, R. Cultural sensitivity in public health: defined and demystified. *Ethnicity & Disease* 9(1):10-21, 1999.

47. Yen, I., and Syme, S. The social environment and health: a discussion of the

epidemiologic literature. *Annual Review of Public Health* 20:287-308, 1999.

48. Robinson, N.; Lloyd, C.; and Stevens, L. Social deprivation and mortality in adults with diabetes mellitus. *Diabetes Medicine* 15:205-212, 1998.

49. Williamson, D., and Fast, J. Poverty and medical treatment: When public policy compromises accessibility. *Canadian Journal of Public Health* 89:120-124, 1998.

50. Editorial. The medical cost of social deprivation—whose job is it anyways? *Diabetes Medicine* 15:187, 1998.

51. Marmot, M. Improvement of social environment to improve health. *Lancet* 351:57-60, 1998.

52. Erickson, P.; Wilson, R.; and Shannon, I. *Years of Healthy Life*. Hyattsville, MD: National Center for Health Statistics, 1995.

53. Murray, C., and Lopez, A. Alternative projections of mortality and disability by cause, 1990-2020: Global burden of disease study. *Lancet* 349:1498-1504, 1997.

54. Weathererall, D. Science and the quiet art: The role of medical research in health care. New York: W.W. Norton, 1995.

55. Detsky, A., and Naglie, I. A clinician's guide to cost-effectiveness analysis. *Annals of Internal Medicine* 113:147-154, 1990.

56. Wagner, E.; Austin, B.; and von Korff, M. Organizing care for patients with chronic illness. *Milbank Quarterly* 4:511-544, 1996.

57. Etzweiler, D. Chronic care: A need in search of a system. *Diabetes Educator* 23:569-573, 1997.

58. McDonald, R. The evolving care of diabetes: Models, managed care and public health. *Annals of Internal Medicine* 20:685-686, 1997.

59. Smith, D. Toward common ground. *Diabetes Care* 20:467-468, 1997.

60. Glasgow, R.; Strycker, L.; Hampson, S.; and Ruggiero, L. Personal-model beliefs and social-environmental barriers related to diabetes self-care management. *Diabetes Care* 20:556-561, 1997.

61. Golden, M. Incorporation of quality-of-life considerations into intensive diabetes management protocols in adolescents. *Diabetes Care* 21:885-886, 1998.

62. Weed, D. Towards a philosophy of public health. *Journal of Epidemiology and Community Health* 53:99-104, 1999.

63. Vinicor, F. The public health burden of diabetes and the reality of limits. *Diabetes Care* 21(S3):C15-18, 1998.

64. Glasgow, R., and Osteen, V. Evaluating diabetes education—are we measuring the most important outcomes? *Diabetes Care* 15:1423-1432, 1992.

65. Brown, S. Studies of educational interventions and outcomes in diabetic adults: A meta-analysis revisited. *Patient Education Counseling* 16:189-215, 1990.

66. Harris, M. NIDDM: Epidemiology and scope of the problem. *Diabetes Spectrum* 9:26-29, 1996.

67. Harris, M.; Eastman, R.; Cowie, C.; Flegal, K.; and Eberhardt, M. Comparison of diabetes diagnostic categories in the U.S. population according to 1997 American Diabetes Association and 1980-1985 World Health Organization Diagnostic Criteria. *Diabetes Care* 20:1859-1862, 1997.

68. Nathan, D.; Meigs, J.; and Singer, D. The epidemiology of cardiovascular disease in type 2 diabetes mellitus: How sweet it is...or is it? *Lancet* 350:4-9, 1997.

69. Harris, M.; Flegal, K.; Cowie, C.; Eberhardt, M.; Goldstein, D.; Little, R., Wiediabeteseyer, H.; and Byrd-Holt, D. Prevalence of diabetes, impaired fasting glucose, and impaired glucose tolerance in U.S. adults: The Third National Health and Nutrition Examination Survey, 1988-1994. *Diabetes Care* 21:518-524, 1998.

70. Hansson, L.; Zanchetti, A.; George-Carruthers, S.; Daholf, B.; Elmfeldt, D.; Julius, S.; Menard, J.; Heinz-Rahn, K.; Wedel, H.; and Westerling, S. Effects of intensive blood-pressure lowering and low-dose aspirin in patients with hypertension: principal results of the Hypertension Optimal Treatment (HOT) randomized trial. *Lancet* 351:1755-1762, 1998.

71. UKPDS Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. *British Medical Journal* 317: 703-713, 1998.

72. Lyons, T., and Jenkins, A. Lipoprotein glycation and its metabolic consequences. *Curr Opin Lipidol* 8:174-180, 1997

73. Kannel, W. The worth of controlling plasma lipids. *American Journal of Cardiology* 81:1047-1049, 1998.

74. Malmberg, K. Diabetes Mellitus, Insulin-Glucose infusion in Acute Myocardial Infarction (DIGAMI) Study Group. Prospective randomized study of intensive insulin treatment on long term survival after acute myocardial

infarction in patients with diabetes mellitus. *British Medical Journal* 14:1512-1515, 1997.

75. Vinicor, F. Features of macrovascular disease of diabetes. In: Haire-Joshu (ed.). *Management of Diabetes Mellitus: Perspectives of Care Across the Life Span.* 2nd Edition. St. Louis, MO: Mosby, 1996, 281-308.

76. Depre, C.; Vanoverschelde, J.; and Taegtmeyer, H. Glucose for the heart. *Circulation* 99: 578-588, 1999.

77. Shotliff, K.; Kaushal, R.; Dove, D.; and Nussey, S. Withholding thrombolysis in patients with diabetes mellitus and acute myocardial infarction. *Diabetic Medicine* 15:1028-1030, 1998.

78. Ochi, J.; Melton, L.; Palumbo, P.; and Chu-Pin, C. A population based study of diabetes mortality. *Diabetes Care* 8:224-229, 1985.

79. Stern, M. Diabetes and cardiovascular disease: The "common soil" hypothesis. *Diabetes* 44:369-374, 1995.

80. Haffner, S. Management of dyslipidemia in adults with diabetes. *Diabetes Care* 21:160-178, 1998.

81. Califf, R., and Granger, C. Hypertension and diabetes and the Fosinopril vs. Amlodipine Cardiovascular Events Trial (FACET). *Diabetes Care* 21:655-657, 1998.

82. Lesser, K., and Carpenter, M. Metabolic changes associated with normal pregnancy and pregnancy associated with diabetes mellitus. *Seminars in Perinatalogy* 18:399-406, 1994.

83. Kitzmiller, J.; Buchanan, T.; Kjos, S.; Combs, C.; and Ratner, R. Preconception care of diabetes, congenital malformations, and spontaneous abortions. *Diabetes Care* 514-541, 1996.

84. American Diabetes Association. Preconception care of women with diabetes. *Diabetes Care* 20(S1):40-43, 1997.

85. Jovanovic, L. American Diabetes Association's Fourth International Workshop-Conference on Gestational Diabetes Mellitus: summary and discussion. *Diabetes Care* 21(S2):131-137, 1998.

86. Gold, A.; Reilly, R.; Little, J.; and Walker, J. The effect of glycemic control in the pre-conception period and early pregnancy on birth weight in women with IDDM. *Diabetes Care* 21:535-538, 1998.

87. American Diabetes Association. Preconception care of women with diabetes. *Diabetes Care* 22(S1):56-59, 1999.

88. Reichard, P.; Nilsson, B.; and Rosenqvist, U. The effect of long-term intensified insulin treatment on the development of microvascular complications of diabetes mellitus. *New England Journal of Medicine* 329:304-309, 1993.

89. UKPDS Group. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). *Lancet* 352:837-853, 1998.

90. Reichard, P.; Pihl, M.; Rosenqvist, U.; and Sule J. Complications in IDDM are caused by elevated blood glucose levels: the Stockhom Diabetes Intervention Study (SDIS) at 10-year follow-up. *Diabetologia* 39:1483-1488, 1996.

91. Frank, R. Etiologic mechanisms in diabetic retinopathy. In: Ryan, S.J. (ed.). *Retina. Volume II.* St. Louis, MO: C.V. Mosby, 1989, 301-326.

92. Defronzo, R. Nephropathy. In: Lebovitz, H.; et al. *Therapy for Diabetes Mellitus and Related Disorders,* 2nd Edition. Alexandria, VA: American Diabetes Association, 1994, 257-269.

93. Clark, C., and Lee, D. Prevention and treatment of the complications of diabetes mellitus. *New England Journal of Medicine* 332:1210-1217, 1995.

94. Nathans, D. The pathophysiology of diabetic complications: How much does the glucose hypothesis explain? *Annals of Internal Medicine* 124:86-89, 1996.

95. Wylie-Rosett, J. Efficacy of diet and exercise in reducing body weight and conversion to overt diabetes. *Diabetes Care* 21:334-335, 1998.

96. Wheeler, M. A brave new world for nutrition and diabetes. *Diabetes Care* 20:109-110, 1997.

97. Clark, D. Physical activity efficacy and effectiveness among older adults and minorities. *Diabetes Care* 20:1176-1182, 1997.

98. Haffner, S. The Scandinavian Simvastatin Survival Study (4S) Subgroup Analysis of Diabetic Subjects: Implications for the prevention of coronary heart disease. *Diabetes Care* 20:469-471, 1997.

99. Braatvedt, G.; Drury, P.; and Cundy, T. Assessing glycemic control in diabetes: Relationships between fructosamine and HbA1C. *New Zealand Journal of Medicine* 110:459-462, 1997.

100. Dinneen, S., and Gertstein H. The association of microalbuminuria and mortality in non-insulin dependent diabetes mellitus. *Archives of Internal Medicine* 14:1413-1418, 1997.

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101. Durrington, P. Prevention of macrovascular disease: absolute proof or absolute risk? *Diabetic Medicine* 12:561-562, 1995.

102. Eckel, R. Natural history of macrovascular disease and classic risk factors for athersclerosis: session summary. *Diabetes Care* 22(S3):21-24, 1999.

103. Peters, A.; Legerreta, A.; Ossorio, R.; and Davidson, M. Quality of outpatient care provided to diabetic patients: A health maintenance organization experience. *Diabetes Care* 19:601-606, 1996.

104. Weiner, J.; Parente, S.; Garnick, D.; Fowles, J.; and Lawthers, A. Variation in office-based quality: Claims-based profile of care provided to Medicare patients with diabetes. *Journal of the American Medical Association* 273:1503-1508, 1995.

105. Clark, C. Where do we go from here? *Annals of Internal Medicine* 124:184-186, 1995.

106. Loe, H. Periodontal disease: the sixth complication of diabetes mellitus. *Diabetes Care* 16(S1):329-334, 1993.

107. Papapanou, P. Periodontal diseases: epidemiology. *Annals of Periodontology* 1:1-36, 1996.

108. Taylor, G. Periodontal treatment and its effects on glycemic control. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontics* 87:311-316, 1999.

109. Miller, C.; Probait, C.; and Acterbaerg, C. Knowledge and misconceptions about food labels among women with NIDDM. *Diabetes Educator* 23:425-432, 1997.

110. Rubin R. and Peyrot, M. Psychosocial problems and interventions in diabetes. *Diabetes Care* 15:1640-1657, 1992.

111. CDC. Diabetes-specific preventive-care practices among adults in a managed care population—Colorado Behavioral Risk Factor Surveillance System. *Morbidity and Mortality Weekly Report* 46:1018-1023, 1997.

112. CDC. Preventive-care knowledge and practices among persons with diabetes mellitus—North Carolina Behavioral Risk Factor Surveillance System, 1994-1995. *MMWR* 46:1023-1026, 1997.

113. American Diabetes Association. Aspirin therapy in diabetes. *Diabetes Care* 22(S1):45-46, 1999.

6

Disability and Secondary Conditions

Co-Lead Agencies: Centers for Disease Control and Prevention;
National Institute on Disability and Rehabilitation
Research, U.S. Department of Education

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Goal

Promote the health of people with disabilities, prevent secondary conditions, and eliminate disparities between people with and without disabilities in the U.S. population.

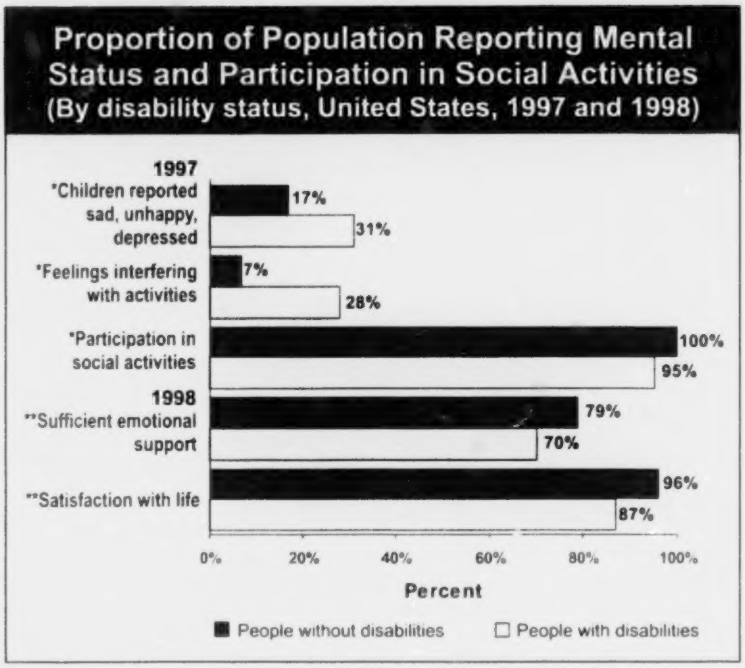
Overview

Because disability status has been traditionally equated with health status, the health and well-being of people with disabilities has been addressed primarily in a medical care, rehabilitation, and long-term care financing context. Four main issues emerge from this contextual approach: the belief that all people with disabilities automatically have poor health; the belief that preventing disabling conditions should be the major focus of public health; the lack of a crosscutting, standard definition of "disability" or "people with disabilities" for public health; and the absence of discussion about the role of the environment in the disabling process. Underemphasis of health promotion and disease prevention activities targeting people with disabilities has increased the occurrence of secondary conditions (medical, social, emotional, family, or community problems that a person with a primary disabling condition likely experiences).

Issues

Understanding these issues will help to clarify the health status of people with disabilities and address the environmental barriers that undermine their health, well-being, and participation in life activities. A broad array of health promotion activities are relevant to all people experiencing a disability, whether they are categorized by racial or ethnic group, gender, and primary conditions or diagnoses, such as major depression, cerebral palsy, diabetes, spinal cord injury, or fetal alcohol syndrome. The activities in themselves, however, do not address the prevention of specific primary conditions. The similarities among people with disabilities are as important as or more important than the differences among clinical diagnostic groups. Caregiver issues have also been considered, as well as environmental barriers. Environmental factors affect the health and well-being of people with disabilities in many ways. For example, weather can hamper wheelchair maneuvers, medical offices and equipment may not be accessible, and shelters or fitness centers may not be staffed or equipped for people with disabilities. Compliance with the Americans with Disabilities Act (ADA) would help overcome some of these barriers. A cross-cutting goal is to eliminate disparities with the nondisabled population.

The *International Classification of Functioning and Disability* (ICIDH-2), developed by the World Health Organization (WHO) with the input of several



Proportion of Population Reporting Mental Status and Participation in Social Activities (By disability status, United States, 1997 and 1998)

Sources: *1997 National Health Interview Survey (NHIS), CDC, NCHS; **1998 Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCEH.

nations—including the United States—provides uniform language and a framework for describing functioning, health, and disability status among all people.[1] This framework will clarify definitional issues and include environmental factors.

Trends

It is estimated that 54 million Americans, or nearly 20 percent of the population, currently live with disabilites. Data for the period 1970 to 1994 suggest that the proportion is increasing. The increase in disability among all age groups indicates a growing need for public health programs serving people with disabilities.

Among youth under age 18 years, disability rates increased from 1990 to 1994. There was a 33 percent increase in activity limitations among girls, from 4.2 percent to 5.6 percent, and a 40 percent increase in activity limitations among boys, from 5.6 percent to 7.9 percent.

Among adults aged 18 to 44 years, there was a 16 percent increase in activity limitations, from 8.8 percent in 1990 to 10.3 percent in 1994. This increase suggests that 3.1 million more people aged 18 to 44 years were limited in 1994 than in 1990.

The absolute number of adults aged 65 years and older with disabilities increased from 26.9 million in 1982 to 34.1 million in 1996. Because the total number of adults aged 65 years and older increased even faster, the proportion of those with disabilities declined from 24.9 percent in 1982 to 21.3 percent in 1994.[3] However, the rise in numbers indicates a growing need for programs and services to serve this older population.

The direct medical and indirect annual costs associated with disability are more than $300 billion, or 4 percent of the gross domestic product.[4] This total cost includes $160 billion in medical care expenditures (1994 dollars) and lost productivity costs approaching $155 billion.

The health promotion and disease prevention needs of people with disabilities are not nullified because they are born with an impairing condition or have experienced a disease or injury that has long-term consequences.[5] People with disabilities have increased health concerns and susceptibility to secondary conditions. Having a long-term condition increases the need for health promotion that can be medical, physical, social, emotional, or societal.

People who have activity limitations report having had more days of pain, depression, anxiety, and sleeplessness and fewer days of vitality during the previous month than people not reporting activity limitations.[6] Increased emotional distress, however, does not arise directly from the person's limitations. The distress is likely to stem from encounters with environmental barriers that reduce the individual's ability to participate in life activities and that undermine physical and emotional health. In view of the increased rates of disability among youth, it is particularly important to target activities and services that address all aspects of health and well-being, including health promotion, preventing secondary conditions, and removing environmental barriers, as well as providing access to medical care. For an older person with a disability, it is important to target worsening coexisting conditions that may intensify and thus threaten general well-being. For example, declining vision combined with declining hearing can greatly impair mobility, nutrition, and fitness.[7]

Disparities

Disability can be viewed as a universal phenomenon everyone experiences at some time.[8] Disability can also be viewed as nonuniversal or confined to a minority of the population, in that people with disabilities may be less visible, undercounted, and underserved.[9] As a potentially underserved minority group, people with disabilities would be expected to experience disadvantages in health and well-being compared with the general population. People with disabilities may experience lack of access to health services and medical care and may be considered at increased risk for various conditions.

Few data systems identify people with disabilities as a subpopulation. Disparities need to be identified to plan appropriate public health programs. Despite the paucity of data, some disparities between people with and without disabilities have been noted. These disparities include excess weight, reduced physical activity, increased stress, and less frequent mammograms for women over age 55 with disabilities.[10]

Opportunities

Health promotion programs that focus on improving functioning across a spectrum of diagnoses and a range of age groups are effective in reducing secondary conditions and outpatient physician visits among people with disabilities.[11, 12, 13] For example, a focus on improving muscle tone, flexibility, and strength can accrue benefits for mobility-impaired people in wheelchairs and mobility-impaired people with arthritis.[14] For people with communication disabilities and disorders, interventions can improve access to health-enhancement programs. People with sight impairments can have access to readable job applications, food labels, and medications. People with hearing impairments can have access to televised or videotaped exercise programs that are captioned or signed by interpreters depicted within an inset of a video screen. Often, the most effective interventions may be environmental rather than medical.

Many health promotion interventions already in place for the population at large may be easily adapted to the needs of people with disabilities. New strategies can be influenced by results from studies that describe risk factors for secondary conditions or protective factors against additional impairments. For example, the number of cases of secondary osteoporosis among able-bodied women and their range of bone mineral density deficits can be estimated using existing Federal data sets. The degree to which women exercise and ingest calcium or estrogen supplements also can be estimated, leading to measurements of the influence of both risk and protective factors associated with osteoporosis in the able-bodied population. Because women with mobility impairments experience an elevated risk for secondary osteoporosis at earlier ages, their risk factors, including diminished bone mineral density, and their potential protective factors, including optimal calcium or estrogen supplementation and types of exercise, become critically important epidemiologic parameters.[15, 16] The results of investigations of secondary osteoporosis already influence health promotion strategies among able-bodied women. Similar investigations can augment the development of health promotion strategies among women with disabilities.

Current guidelines provide opportunity to design health promotion interventions targeting people with disabilities that accommodate ongoing evidence-based evaluation[17] and demonstrate cost-effectiveness.[18, 19] For example, clinical interventions that focus on appropriate and timely medical care can be equally accessible for people with and without disabilities. Mammography screening is recommended every 1 to 2 years, with or without annual clinical breast examination, for able-bodied women aged 50 to 69 years.[18] This recommendation can also be adapted for women with disabilities. Clinical providers, however, must first recognize the reasons women with disabilities often refrain from seeking mammography services, such as the lack of adaptive equipment on mammography screening machines or unfamiliarity with needs of people with disabilities expressed by clinicians. Counseling to prevent injuries among all adults also is recommended. For example, men and women with disabilities, especially those with skeletal insufficiencies or calcium deficits, are at increased risk for fractures. Adding bone mineral screening and fitness counseling during clinical encounters may be beneficial in preventing injuries. In these ways, evidence-based health promotion and disease prevention programs can be developed, implemented, and evaluated to target the health and injury disparities between people with and without disabilities.

Health promotion interventions for people with disabilities, in the community, clinical settings, or elsewhere, should include culturally and linguistically appropriate elements.

Interim Progress Toward Year 2000 Objectives

Healthy People 2000 did not have a chapter specifically establishing health objectives for people with disabilities. However, there were some objectives targeting people with disabilities, including leisure-time physical activity, use of community support programs by people with severe mental disorders, treatment for depression, activity limitations associated with chronic conditions and back conditions, and receipt of recommended clinical preventive services. A progress review held in January 1997 showed that none of these specific objectives relevant to people with disabilities had been met,[10] and parity with the nondisabled population will continue to be monitored.

People with disabilities reporting no leisure-time physical activity declined from the 1985 baseline of 35 percent to 29 percent in 1995, short of the target of 20 percent for 2000. In addition, the review noted several disparities. Forty percent of people with disabilities aged 20 years and older reported being overweight when compared with 35 percent of the general population and short of the goal of 25 percent; 49 percent of people aged 18 years and older with disabilities reported adverse health effects from stress compared with 34 percent of the general population; and clinical preventive services showed disparities for data on tetanus boosters (56 percent versus 59 percent for the general population), Pap tests (69 percent versus 77 percent of women aged 18 years and over in 1994), and breast exams and mammograms (50 percent versus 56 percent for women aged 50 years and over).

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99*.

Disability and Secondary Conditions

Goal: Promote the health of people with disabilities, prevent secondary conditions, and eliminate disparities between people with and without disabilities in the U.S. population.

Number	Objective
6-1	Standard definition of people with disabilities in data sets
6-2	Feelings and depression among children with disabilities
6-3	Feelings and depression interfering with activities among adults with disabilities
6-4	Social participation among adults with disabilities
6-5	Sufficient emotional support among adults with disabilities
6-6	Satisfaction with life among adults with disabilities
6-7	Congregate care of children and adults with disabilities
6-8	Employment parity
6-9	Children and youth with disabilities included in regular education programs
6-10	Accessibility of health and wellness programs
6-11	Assistive devices and technology
6-12	Environmental barriers affecting participation
6-13	Surveillance and health promotion programs

6-1. Include in the core of all relevant Healthy People 2010 surveillance instruments a standardized set of questions that identify "people with disabilities."

Target: 100 percent.

Baseline: No Healthy People 2010 surveillance instruments include a standard set of questions that identify people with disabilities.

Target setting method: Total coverage.

Data source: CDC, NCEH.

The call for statistics on people with disabilities is longstanding and increasing. Various Federal agencies have attempted to collect these data in several research areas.[20] Two separate issues exist regarding data collection: the use of different operational survey definitions of disability and not collecting information from people with disabilities during surveys. None of the federally funded surveys attempting data collection is using the same definition of disability. This lack of standardization has made it difficult to (1) identify and include all individuals with a disability, (2) measure the nature and extent of disability in the United States, (3) assess the impact of various disabilities on the person's ability to participate in society, (4) assess the extent of secondary conditions among people with disabilities, and (5) identify environmental barriers to participation and risk factors for poor health in this population. The issue of not including people with disabilities is reflected in the initial survey design. Some studies are not designed to target and analyze data on people with disabilities. People with disabilities could be included as a select population if, for example, the data collection method ensured appropriate access and outreach.

To remedy these gaps, a set of survey questions has been developed and tested to identify individuals with varying degrees of disability in terms of activity limitations.[21] This short set of questions may be placed in the core of all Healthy People surveillance instruments that collect demographic data to include and standardize information on people with disabilities. On the basis of standardization and inclusion in the Nation's disability data collection activities, the call for disability statistics may be satisfied. Once collected, these data will help government policymakers, consumers and advocates, researchers, and clinicians make better informed choices to promote the health status and well-being of people with disabilities.

6-2. Reduce the proportion of children and adolescents with disabilities who are reported to be sad, unhappy, or depressed.

Target: 17 percent.

Baseline: 31 percent of children and adolescents with disabilities were reported to be sad, unhappy, or depressed in 1997.

Target setting method: 45 percent improvement (parity with children and adolescents without disabilities in 1997).

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Children and Adolescents Under Age 18 Years, 1997	Reported To Be Sad, Unhappy, or Depressed	
	With Disabilities	Without Disabilities*
	Percent	
TOTAL	31	17
Race and ethnicity		
American Indian or Alaska Native	DSU	DSU
Asian or Pacific Islander	DSU	13
Asian	DSU	16
Native Hawaiian and other Pacific Islander	DSU	DSU
Black or African American	DSU	16
White	31	17
Hispanic or Latino	32	16
Not Hispanic or Latino	30	17
Black or African American	DSU	17
White	31	18
Gender		
Female	32	16
Male	30	18
Family income level		
Poor	DSU	20
Near poor	31	17
Middle/high income	27	17

Children and Adolescents Under Age 18 Years, 1997	Reported To Be Sad, Unhappy, or Depressed With Disabilities	 Without Disabilities*
	Percent	
Geographic location		
Urban	27	17
Rural	39	16

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*The total represents the target. Data for population groups by race, ethnicity, gender, socioeconomic status, and geographic location are displayed to further characterize the issue.

6-3. Reduce the proportion of adults with disabilities who report feelings such as sadness, unhappiness, or depression that prevent them from being active.

Target: 7 percent.

Baseline: 28 percent of adults aged 18 years and older with disabilities reported feelings that prevented them from being active, 1997 (age-adjusted to the year 2000 standard population).

Target setting method: 75 percent improvement (parity with adults without disabilities in 1997).

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1997	Reported Feelings That Prevent Activity With Disabilities	 Without Disabilities*
	Percent	
TOTAL	28	7
Race and ethnicity		
American Indian or Alaska Native	22	15
Asian or Pacific Islander	30	7
Asian	DSU	6
Native Hawaiian and other Pacific Islander	DSU	14
Black or African American	31	8
White	28	7

Adults Aged 18 Years and Older, 1997	Reported Feelings That Prevent Activity With Disabilities	Without Disabilities*
	Percent	
Hispanic or Latino	40	9
Not Hispanic or Latino	27	7
Black or African American	31	8
White	27	6
Gender		
Female	30	8
Male	26	6
Family income level		
Poor	38	13
Near poor	30	10
Middle/high income	21	6
Education level (aged 25 years and older)		
Less than high school	34	10
High school graduate	29	7
At least some college	25	5
Geographical location		
Urban	29	7
Rural	26	6

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*The total represents the target. Data for population groups by race, ethnicity, gender, socioeconomic status, and geographic location are displayed to further characterize the issue.

Children and adults with disabilities and their families face issues of coping, adapting, adjusting, and learning to live well with the disability—a dynamic, ongoing process. Good mental health, including refusal to internalize the social stigma of disability and developing a positive attitude and strong self-esteem, is a key ingredient to overcoming these issues.[22] Improving mental health status among people with disabilities and their families will help address psychological barriers and enhance their ability to participate fully in society.[23]

6-4. Increase the proportion of adults with disabilities who participate in social activities.

Target: 100 percent.

Baseline: 95.4 percent of adults aged 18 years and older with disabilities participated in social activities in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Total participation (parity with adults without disabilities in 1997).

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1997	Participation In Social Activity	
	With Disabilities	Without Disabilities*
	Percent	
TOTAL	95.4	100.0
Race and ethnicity		
American Indian or Alaska Native	87.4	100.0
Asian or Pacific Islander	99.6	100.0
Asian	99.5	100.0
Native Hawaiian and other Pacific Islander	100.0	100.0
Black or African American	95.0	99.8
White	95.6	100.0
Hispanic or Latino	93.9	100.0
Not Hispanic or Latino	95.5	100.0
Black or African American	95.0	99.8
White	95.7	100.0
Gender		
Female	95.2	99.9
Male	95.7	100.0
Family income level		
Poor	93.1	99.9
Near poor	95.8	99.9
Middle/high income	96.5	100.0

Adults Aged 18 Years and Older, 1997	Participation In Social Activity	
	With Disabilities	Without Disabilities*
	Percent	
Education level (aged 25 years and older)		
Less than high school	94.1	99.9
High school graduate	94.8	99.9
At least some college	96.0	100.0
Geographic location		
Urban	95.3	100.0
Rural	95.6	99.9

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*The total represents the target. Data for population groups by race, ethnicity, gender, socioeconomic status, and geographic location are displayed to further characterize the issue.

People with disabilities report significantly lower levels of social participation compared with people without disabilities.[24] Participating in social activities routinely requires personal interaction with the environment, a component of life that is vital to the well-being of all humanity. ICIDH-2, the *International Classification of Functioning and Disability*, highlights the importance of participating in social activities as a measurable outcome of living well with a disability.[1] The ICIDH-2 framework indicates that the environment should be examined as a barrier to participation.

Social participation can include activities such as volunteering, shopping, going to the movies, or attending sporting events. Targeting increased participation in regular social activities such as traveling, socializing with friends and family, attending church or community events, and voting can result in improved functional status and well-being.

6-5. Increase the proportion of adults with disabilities reporting sufficient emotional support.

Target: 79 percent.

Baseline: 70 percent of adults aged 18 years and older with disabilities reported sufficient emotional support in 1998 (data from 10 States and the District of Columbia).

Target setting method: 13 percent improvement (parity with adults without disabilities in 1998).

Data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

Adults Aged 18 Years and Older, 1998*	**Reported Sufficient Emotional Support** **With Disabilities**	 **Without Disabilities**
	Percent	
TOTAL	70	79
Race and ethnicity		
American Indian or Alaska Native	56	73
Asian or Pacific Islander	44	70
Asian	DSU	DSU
Native Hawaiian and other Pacific Islander	DSU	DSU
Black or African American	53	68
White	74	82
Hispanic or Latino	43	69
Not Hispanic or Latino	72	80
Black or African American	DNA	DNA
White	DNA	DNA
Gender		
Female	70	79
Male	70	79
Family income level		
Poor	60	69
Near poor	59	69
Middle/high income	76	81
Education level (aged 25 years and older)		
Less than high school	57	70
High school graduate	74	76
At least some college	72	80

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data are from 10 states and the District of Columbia.

The total represents the target. Data for population groups by race, ethnicity, gender, socioeconomic status, and geographic location are displayed to further characterize the issue.

Emotional support often is derived from a person's social supports. Two hypotheses suggest that social supports help a person cope with stress and that supportive relationships help reduce a person's level of disease in various life situations.[25] With the information gained by monitoring the personal perspective, the United States may better meet the needs of people with disabilities.

6-6. Increase the proportion of adults with disabilities reporting satisfaction with life.

Target: 96 percent.

Baseline: 87 percent of adults aged 18 years and older with disabilities reported satisfaction with life in 1998 (data from 10 States and the District of Columbia).

Target setting method: 10 percent improvement (parity with adults without disabilities in 1998).

Data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

Adults Aged 18 Years and Older, 1998*	Reported Satisfaction With Life With Disabilities	 Without Disabilities
	Percent	
TOTAL	87	96
Race and ethnicity		
American Indian or Alaska Native	81	94
Asian or Pacific Islander	82	97
Asian	DSU	DSU
Native Hawaiian and other Pacific Islander	DSU	DSU
Black or African American	83	92
White	88	96
Hispanic or Latino	81	94
Not Hispanic or Latino	88	86
Black or African American	DNA	DNA
White	DNA	DNA
Gender		
Female	88	95
Male	87	96

Adults Aged 18 Years and Older, 1998*	Reported Satisfaction With Life	
	With Disabilities	Without Disabilities
	Percent	
Family income level		
Poor	78	90
Near poor	81	93
Middle/high income	93	96
Education level (aged 25 years and older)		
Less than high school	83	94
High school graduate	87	95
At least some college	88	95

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data are from 10 states and the District of Columbia.

The total represents the target. Data for population groups by race, ethnicity, gender, socioeconomic status, and geographic location are displayed to further characterize the issue.

Satisfaction with life is associated with the more general term quality of life, which is a personal evaluation of one's own position in numerous dimensions of life, including physical, emotional, social, spiritual, level of independence, and environmental support.[20] Monitoring the life satisfaction of people with disabilities, as well as that of the broader population, allows an opportunity to evaluate society's progress in accommodating the needs of people with disabilities.

6-7. Reduce the number of people with disabilities in congregate care facilities, consistent with permanency planning principles.

Objective	Reduction in People With Disabilities in Congregate Care Facilities	1997 Baseline	2010 Target
6-7a.	Adults aged 22 years and older in 16 or more bed congregate facilities	93,362	46,681
6-7b.	Persons aged 21 years and under in congregate care facilities	24,300	0

Target setting method: For adults, 50 percent improvement; for persons aged 21 years and under, total elimination.

Data source: Survey of Residential Facilities, University of Minnesota.

Data for population groups currently are not collected.

Many people with activity limitations or cognitive impairments need ongoing and long-term assistance, yet some do not require institutional care.[27] From the 1970s through the 1990s, States began reducing the size of and closing State institutions that served people with mental retardation or developmental disabilities. This social, political, and economic movement resulted in dramatic growth in the total number of individuals served in community residential settings—from 5,000 in 1960 to 255,117 in 1996.[28, 29] This movement, coupled with increases in life expectancy and an expanding elderly population, resulted in the development of several community-based and in-home assistance programs, such as home-delivered meals, hospice, and homemaker and home-health services. The goal to increase home and community-based care will broaden health and lifestyle choices for people with disabilities and their families.[30]

Much of this expansion in community services is funded through Medicaid Home and Community-Based Services (HCBS) Waiver Program, a Federal-State partnership authorized in 1981 under Title XIX of the Social Security Act. Between 1990 and 1997, the HCBS Program demonstrated a 25.8 percent increase in benefits per person.[29] Despite this dramatic growth to support home and community-based care, in 1993, only 11 percent of long-term Medicaid expenditures and 5.3 percent of total Medicaid expenditures went toward community-based care.[31] The other sources of support for community-based long-term care are Medicare, Title III of the Older Americans Act, and the Social Services Block Grant.[31]

6-8. Eliminate disparities in employment rates between working-aged adults with and without disabilities.

Target: 82 percent.

Baseline: 52 percent of adults with disabilities aged 21 through 64 years were employed in 1994-95.

Target setting method: 58 percent improvement (parity with adults without disabilities in 1994-95).

Data source: Survey of Income and Program Participation (SIPP), U.S. Department of Commerce, Bureau of the Census.

Adults Aged 21 through 64 Years, 1994-95	Employment of People With Disabilities	Employment of People Without Disabilities*
	Percent	
TOTAL	52	82
Race and ethnicity		
American Indian or Alaska Native	41	77
Asian or Pacific Islander	48	78
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	37	77
White	DNA	DNA
Hispanic or Latino	45	76
Not Hispanic or Latino	DNA	DNA
Black or African American	DNA	DNA
White	57	84
Gender		
Female	46	75
Male	60	90
Education level		
Less than high school	34	69
High school graduate	54	81
At least some college	63	83

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*The total represents the target. Data for population groups by race, ethnicity, gender, and socioeconomic status are displayed to further characterize the issue.

The ability to work has implications for economic and social self-sufficiency, for full inclusion and integration into society, and for personal self-esteem. Work and disability are understood best within the context of a person's abilities and the role of accommodation, accessibility, and legal mandates. The Presidential Task Force on Employment of Adults with Disabilities emphasized the need for a coordinated and aggressive national policy to address the many components of work and disability. Changes in economic policies and benefits underscore the need to continue to examine and address the structural, social, and psychological deterrents to work for some persons with disabilities.

In 1994-95, SIPP employment rates varied depending on degree of disability. For persons aged 21 through 64 years with no disability, the rate was 82.1 percent, whereas those with a nonsevere disability had a rate of 76.9 percent, and those with a severe disability had a rate of 26.1 percent. Analyses of rates by gender indicate similar patterns. Moreover, employment patterns for persons with disabilities mirror general social patterns of employment rates for age, race, and ethnicity. Education has a positive association with employment for all people, although the association is strongest for adolescents and adults with a "work disability."

6-9. Increase the proportion of children and youth with disabilities who spend at least 80 percent of their time in regular education programs.

Target: 60 percent.

Baseline: 45 percent of children and youth with disabilities aged 6 to 21 years spent at least 80 percent of their time in regular education programs in 1995-96 school year.

Target setting method: 33 percent improvement. (Better than the best will be used when data are available.)

Data source: Data Analysis System (DANS), U.S. Department of Education, Office of Special Education.

Data for population groups currently are not analyzed.

This objective aims to improve the well-being of students with disabilities by encouraging academic and learning opportunities and nonacademic social and emotional experiences that can facilitate normal growth and development, postsecondary educational attainment, independent living skills, and economic participation as adults. Serving students with disabilities in regular nonspecial education classrooms is a concern that cuts across the goals of many Federal agencies. The current target of the Office of Special Education and Rehabilitative Services is that 60 percent of children and youth with disabilities aged 6 through

21 years will be reported by the States as being served in the regular education classroom at least 80 percent of the time. In support of the target, the 1997 Amendments to the Individuals with Disabilities Education Act states that "to the maximum extent appropriate, children and youth with disabilities, including children in public or private institutions or other care facilities, are educated with children who are not disabled."[34]

6-10. (Developmental) Increase the proportion of health and wellness and treatment programs and facilities that provide full access for people with disabilities.

Potential data source: National Independent Living Centers Network.

For people with disabilities to have the opportunity for healthy lives, both physically and emotionally, programs and facilities that offer wellness and treatment services must be fully accessible. Effective enforcement of the Americans with Disabilities Act can improve services for people with disabilities and help prevent secondary disabilities.

6-11. (Developmental) Reduce the proportion of people with disabilities who report not having the assistive devices and technology needed.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

In 1990, a one-time survey showed that 2.5 million people said they needed assistive technology that they did not have.[35] The inability to pay for such technology was the main reason given for the unmet need. Assistive technology can be critical in the lives of people with disabilities; thus, technology need, availability, and use must be studied.[36] Technology can aid the independence and self-sufficiency of people with disabilities and can enable people to work, attend school, and participate in community life. Without assistive technology, people with disabilities may become dependent and isolated.

6-12. (Developmental) Reduce the proportion of people with disabilities reporting environmental barriers to participation in home, school, work, or community activities.

Potential data source: Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.

The focus on measuring the environmental impact on people with disabilities echoes the underlying theme of the disability rights movement and the ADA.[37] Both argue that the most important outcome for persons with disabilities—in fact, for all persons in the United States—is their full participation as active, involved, and productive members of society. Indeed, this participation is the implicit outcome for the overarching Healthy People themes to achieve a healthier life and eliminate disparities.

Full participation cannot be achieved without eliminating environmental barriers such as architectural barriers, organizational policies and practices, discrimination, and social attitudes. Thus, public health agencies need to measure not only the nature and extent of disability in the United States, but also the extent to which environmental factors enhance or impede that participation.

6-13. Increase the number of Tribes, States, and the District of Columbia that have public health surveillance and health promotion programs for people with disabilities and caregivers.

Target and baseline:

Objective	Increase in Public Health Surveillance and Health Promotion Programs for People With Disabilities and Caregivers	1999 Baseline	2010 Target
		Number	
6-13a.	States and the District of Columbia	14	51
6-13b.	Tribes	**Developmental**	

Target setting method: Total coverage.

Data sources: Tribal, State, and District of Columbia reports, Office on Disability and Health, CDC.

The needs of people with disabilities and caregivers should be addressed by public health activities. In a telephone survey, 23 percent of all U.S. households included at least one caregiver.[58] While not all people with disabilities are dependent on the services of a nonpaid (usually a family member) or paid caregiver, meeting the needs of those who benefit from personal assistance cannot be easily separated from the needs of people who provide assistance.[59] Whether caring for infants, children, or adults with disabilities or for the increasing number of people who become activity-limited as they grow older, the caregiver is an important health component.[60]

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

- 1-1 People with health insurance
- 1-4. Source of ongoing care
- 1-5. Usual primary care provider

1-6. Difficulties or delays in obtaining health care
1-16. Pressure ulcers among nursing home residents

2. Arthritis, Osteoporosis, and Chronic Back Conditions

2-3. Personal care limitations
2-5. Employment rates
2-8. Arthritis education
2-11. Activity limitations due to chronic back conditions

3. Cancer

3-9. Sun exposure
3-11. Pap tests
3-13. Mammograms

5. Diabetes

5-1. Diabetes education
5-2. Prevent diabetes
5-3. Reduce diabetes
5-4. Diagnosis of diabetes
5-9. Foot ulcers
5-10. Lower extremity amputations

7. Educational and Community-Based Programs

7-1. High school completion
7-3. Health-risk behavior information for college and university students
7-6. Participation in employer-sponsored health promotion activities
7-11 Culturally appropriate community health promotion programs
7-12. Older adult participation in community health promotion activities

9. Family Planning

9-2. Birth spacing
9-4. Contraceptive failure
9-7. Adolescent pregnancy

12. Heart Disease and Stroke

12-1. Coronary heart disease (CHD) deaths
12-7. Stroke deaths
12-9. High blood pressure
12-10. High blood pressure control
12-11. Action to help control blood pressure
12-12. Blood pressure monitoring
12-13. Mean total cholesterol levels
12-14. High blood cholesterol levels
12-15. Blood cholesterol screening

14. Immunization and Infectious Diseases

14-22. Universally recommended vaccination among children aged 19 to 35 months

14-24. Fully immunized children aged 19 to 35 months

14-26. State/community population-based immunization registries for children

14-29. Flu and pneumococcal vaccination of high-risk adults

16. Maternal, Infant, and Child Health

16-1. Fetal and infant deaths

16-2. Child deaths

16-4. Maternal deaths

16-6. Prenatal care

16-9. Cesarean deliveries

16-10. Low birth weight and very low birth weight

16-11. Preterm birth

16-13. Infants put to sleep on their backs

16-16. Optimum folic acid

16-17. Prenatal substance exposure

16-19. Breastfeeding

16-21. Sepsis among infants with sickle cell disease

16-23. Service systems for children with special health care needs

17. Medical Product Safety

17-3. Provider review of medications taken by patients

17-4. Receipt of useful information from pharmacies

17-5. Receipt of counseling from prescribers and dispensers

18. Mental Health and Mental Disorders

18-4. Employment of persons with serious mental illness

18-5. Treatment for adults with mental disorders

19. Nutrition and Overweight

19-1. Healthy weight in adults

19-2. Obesity in adults

19-3. Overweight or obesity in children and adolescents

19-4. Growth retardation in children

19-5. Fruit intake

19-6. Vegetable intake

19-7. Grain product intake

19-8. Saturated fat intake

19-9. Total fat intake

19-10. Sodium intake

19-11. Calcium intake

19-12. Iron deficiency in young children and in females of childbearing age

19-13. Anemia in low-income pregnant females

19-17. Nutrition counseling for medical conditions

19-18. Food security

20. Occupational Safety and Health

20-1. Work-related injury deaths

20-2. Work-related injuries

20-3. Overexertion or repetitive motion

20-4. Pneumoconiosis deaths

20-6. Work-related assault

21. Oral Health

21-1. Dental caries experience

21-2. Untreated dental decay

21-3. No permanent tooth loss

21-4. Complete tooth loss

21-5. Periodontal disease

21-6. Early detection of oral and pharyngeal cancer

21-8. Dental sealants

21-10. Use of the oral health care system

21-13. Use of the oral health care system by residents of long-term care facilities

22. Physical Activity and Fitness

22-1. No leisure-time physical activity

22-2. Moderate physical activity

22-3. Vigorous physical activity

22-4. Muscular strength and endurance

22-5. Flexibility

23. Public Health Infrastructure

23-4. Data for all population groups

23-5. Data for Leading Health Indicators, Health Status Indicators, and Priority Data Needs at Tribal, State, and local levels

24. Respiratory Diseases

24-1. Deaths from asthma

24-5. School or work days missed

24-6. Patient education

26. Substance Abuse

26-5. Alcohol-related emergency department visits

27. Tobacco Use

27-1. Adult tobacco use

27-5. Smoking cessation by adults

28. Vison and Hearing

28-10. Vision rehabilitation services and devices

28-12. Otitis media

28-13. Rehabilitation hearing impairment

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Assistive devices and technology: Under the Assistive Technology Act of 1998 (P.L.105-394), "any item, piece of equipment, or product system, whether acquired commercially, modified or customized, that is used to increase, maintain, or improve the functional capabilities of individuals with disabilities."

Activity limitations: Problems in a person's performance of everyday functions such as communication, self-care, mobility, learning, and behavior.

Congregate care facilities: An out-of-home facility that provides housing for people with disabilities in which rotating staff members provide care—16 or more beds when referring to adults and any number of beds when referring to children and youth under age 21 years. Congregate care excludes foster care, adoptive homes, residential schools, correctional facilities, and nursing facilities.

Disability: The general term used to represent the interactions between individuals with a health condition and barriers in their environment.

Environmental factors: The policies, systems, social contexts, and physical barriers or facilitators that affect a person's participation in activities, including work, school, leisure, and community events.

Health promotion: Efforts to create healthy lifestyles and a healthy environment to prevent medical and other secondary conditions, such as teaching people how to address their health care needs and increasing opportunities to participate in usual life activities.

ICIDH-2: *International Classification of Functioning and Disability*, the World Health Organization's conceptual and coding framework for describing a person's functioning and disability associated with his or her health condition.

People with disabilities: People identified as having an activity limitation or who use assistance or who perceive themselves as having a disability.

Permanency planning: A planning process undertaken by public and private agencies on behalf of a child with developmental disabilities and their families with the explicit goal of securing a permanent living arrangement that enhances the child's growth and development.[41]

Secondary conditions: Medical, social, emotional, family, or community problems that a person with a primary disabling condition likely experiences.

References

1. World Health Organization. *International Classification of Functioning and Disability (ICIDH-2): Beta-1 Draft for Field Trials.* Geneva: the Organization, 1997, 11-21, 206-215, 221-225.

2. McNeil, J.M. Americans with Disabilities 1994-95. *Current Populations Report* P7061:3-6, August 1997.

3. National Institute on Disability and Rehabilitation Research. Trends in Disability Prevalence and Their Causes: Proceedings of the Fourth National Disability Statistics and Policy Forum, May 16, 1997, Washington, DC. San Francisco, CA: The Disability Statistics Rehabilitation Research and Training Center, 1998.

4. Institute of Medicine. *Enabling America: Assessing the Role of Rehabilitation Science and Engineering.* Washington, DC: National Academy Press, 1997.

5. U.S. Department of Health and Human Services (HHS). *Healthy People 2000. National Health Promotion and Disease Prevention Objectives.* Pub. No. (PHS)

91-50213, Washington, DC: the Department, 1991, 39-42.

6. Centers for Disease Control and Prevention. Health Related Quality of Life and Activity Limitation: Eight States, 1995. *Morbidity and Mortality Weekly Report* (47):134-140, 1998.

7. Manton, K.; Corder, L.; and Stallard, E. *Chronic Disability Trends in Elderly in United States Populations 1982-1994.* Washington, DC: National Academy of Sciences, 1997, 2593-2598.

8. Zola, I. Disability Statistics, What We Count and What It Tells Us, A Personal and Political Analysis. *Journal of Disability Policy Studies* 4(2):10-39, 1993.

9. Hahn, H. The Political Implications of Disability Definitions and Data. *Journal of Disability Policy Studies* 4(2):42-52, 1993.

10. Office of Disease Prevention and Health Promotion (ODPHP). *Healthy People 2000 Progress Review, People with Disabilities.* Washington, DC: The Department, ODPHP, January 1997, 1-3.

11. Seekins, T.; White, G.; Ravesloot, C.; Norris, K.; Szalda-Petree, A.; Lopez, J.C.; Golden, K.; and Young, Q. Developing and Evaluating Community-Based Health Promotion Programs for People with Disabilities. In: *Secondary Conditions Among People With Disabilities: Current Research and Trends.* Pacific Grove, CA: Brookes-Cole Publisher, in press.

12. Lorig, K. A Workplace Health Education Program that Reduces Outpatient Visits. *Medical Care* 9:1044-1054, 1995.

13. Research and Training Center on Rural Rehabilitation. Cost containment Through Disability Prevention: Preliminary Results of a Health Promotion Workshop for People with Physical Disabilities. Missoula, MT: University of Montana, Research and Training Center on Rural Rehabilitation, 1996.

14. Lorig, K.; Lubeck, D.; Kraines, R.; Seleznick, M.; and Holman, H. Outcomes of Self-Help Education for Patients with Arthritis. *Arthritis Rheumatism* 28(6):680-685, 1985.

15. National Osteoporosis Foundation. Physician Guide to Prevention and Treatment of Osteoporosis. Washington, DC: National Osteoporosis Foundation, 1998.

16. Melnikova, N.; Hough, J.; and Lollar, D. "Osteoporosis Among Women with Physical Disabilities: Risk factors and protective factors." Presentation at the 126th Annual Meeting of the American Public Health Association, Disability Forum Special Interest Group, Washington, DC, November 17, 1998.

17. DHHS. *Healthy People in Healthy Communities: A Guide for Community Leaders.* Washington, DC: the Department, Public Health Service, Office of Public Health and Science, ODPHP, June 1998.

18. DHHS. *Preventive Services Task Force: Guide to Clinical Preventive Services, 2nd Edition.* Washington, DC, the Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 1995, Chapter V.

19. DHHS. *Task Force on Community Preventive Services: Guide to Community Preventive Services.* Washington, DC: the Department, in press.

20. National Council on Disability. *Reorienting Disability Research: letter to the United States President.* Washington, DC: the Council, April 1998, 1-17.

21. Office on Disability and Health. *1999 Behavioral Risk Factor Surveillance System Disability Module.* Atlanta, GA: Center for Disease Control and Prevention, 1999.

22. Tuttle, D. Self Esteem and Adjusting with Blindness: The process of responding to life demands. Springfield, IL: Charles C. Thomas Publisher, 1984, 61, 145-158.

23. Sowers, J., and Powers, L. Enhancing the Participation and Independence of Students with Severe and Multiple Disabilities in Performing Community Activities. *Mental Retardation* 33(4):209-220, August 1995.

24. Kaye, S. Is the Status of People with Disabilities Improving? *Disability Status Abstract (21):3-4,* May 1998.

25. Novack, T., and Gage, R. Assessment of Family Functioning and Social Support. In: Cushman, L., Scherer, M. (eds.). *Psychological Assessment in Medical Rehabilitation.* Washington, DC: American Psychological Association, 1995, 286-297.

26. Patrick, D. Rethinking Prevention for People with Disabilities Part I: A Conceptual Model for Promoting Health. *American Journal of Health Promotion* 11(4):25-260, 1997.

27. Swain, P. Helping Disabled People: The users view. *British Medical Journal* 306(6883):990-992, April 1993.

28. Braddock, D.; Hemp, R.; Parish, S.; and Westrich, J. *The State of the States in Developmental Disabilities.* 5th Edition. Washington, DC:

American Association on Mental Retardation, 1998, 9-10.

29. Prouty, R., and Lakin, K. Residential Services for Persons with Developmental Disabilities: Status and trends through 1997. Minneapolis, MN: University of Minnesota, Research Training Center on Community Living, Institute on Community Integration, 1998, xii, 47, 53, 58, 60, 65-67, 76, 88, 101.

30. Kane, R. Expanding the Home Care Concept: Blurring distinctions among home care, institutional care and other long-term care facilities. *Milbank Quarterly* 73(2):161-186, 1995.

31. Hardwick, S.; Pack, J.; Donohoe, E.; and Aleksa, K. *Across the States 1994: Profiles of Long-Term Care Systems*. Washington, DC: American Association of Retired Persons, Center on Elderly People Living Alone, Public Policy Institute, 1994, 5-7.

32. Presidential Task Force on Employment of Adults with Disabilities. *Recharting the Course: First Report*. Washington, DC: Presidential Task Force on Employment of Adults with Disabilities, 1998.

33. Stoddard, S.; Jans, L.; Ripple, J.; and Kraus, L. *Chartbook on Work and Disabilities in the United States, 1998. An Info Use Report*. Washington, DC: U.S. National Institute on Disability and Rehabilitation, 1998.

34. U.S. Department of Education. *To Assure the Free Appropriate Public Education of all Children with Disabilities: Nineteenth Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, Section 618*. Washington, DC: the Department, 1997.

35. Laplante, M.; Hendershot, G.; and Moss, A. Assistive Technology Devices and Home Accessibility Features: Prevalence, payment, need, and trends. In: *Advance Data from Vital and Health Statistics: No. 217*. Hyattsville, MD: National Center for Health Statistics, 1992.

36. National Council on Disability. *Study on Financing of Assistive Technology Devices and Services for Individuals with Disabilities*. Washington, DC: the Council, 1993.

37. National Council on Disability. *Equality of Opportunity: The Making of the Americans with Disabilities Act*. Washington, DC: the Council, July 1997, 9-21.

38. National Alliance for Caregiving and the American Association of Retired Persons. *Family Caregiving in the U.S.: Findings from a national survey*. Bethesda, MD: The American Association of Retired Persons, Washington, DC, June 1997, 8.

39. Singer, G., and Irvin L. *Support for Caregiving Families: Enabling positive adaptation to disability*. Baltimore, MD: Paul H. Brooks Publishing Company, 1989, 44.

40. Pugliese, J.M.; Ingram, T.O.; and Edwards, G. *Stability of Employment Status of Caregivers Who Have a Child with a Disability*. Birmingham, AL: United Cerebral Palsy of Greater Birmingham, Inc., February 1, 1998.

7

Educational and Community-Based Programs

Co-Lead Agencies: Centers for Disease Control and Prevention;
Health Resources and Services Administration

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Goal

Increase the quality, availability, and effectiveness of educational and community-based programs designed to prevent disease and improve health and quality of life.

Overview

Educational and community-based programs have played an integral role in the attainment of Healthy People 2000 objectives and will continue to contribute to the improvement of health outcomes in the United States by the year 2010. These programs, developed to reach people outside traditional health care settings, are fundamental for health promotion and quality of life.

Issues and Trends

People working together can improve individual health and create healthier communities. Although more research is needed in community health improvement, clearly, the health of communities not only depends on the health of individuals, but also on whether the physical and social aspects of communities enable people to live healthy lives.[1] Health and quality of life rely on many community systems and factors, not simply on a well-functioning health and medical care system. Making changes within existing systems, such as the school system, can effectively and efficiently improve the health of a large segment of the community. Also, environmental and policy approaches, such as better street lighting and policies to fortify foods, tend to have a greater impact on the whole community than do individual-oriented approaches.[2] An increasing number of communities are using community health planning processes, such as Assessment Protocol for Excellence in Public Health (APEX/PH); Healthy Cities, Healthy Communities; and Planned Approach to Community Health (PATCH), to take ownership of their health and quality-of-life improvement process.[3]

Communities experiencing the most success in addressing health and quality-of-life issues have involved many components of their community: public health, health care, business, local governments, schools, civic organizations, voluntary health organizations, faith organizations, park and recreation departments, and other interested groups and private citizens. Communities that are eager to improve the health of specific at-risk groups have found that they are more likely to be successful if they work collaboratively within their community and if the social and physical environments also are conducive to supporting healthy changes.

Because many health problems relate to more than one behavioral risk factor, as well as to social and environmental factors, communities with effective programs also work to improve health by addressing the multiple determinants of a health problem. Among the more effective community health promotion programs are those that implement comprehensive intervention plans with multiple intervention strategies, such as educational, policy, and environmental, within various settings, such as the community, health care facilities, schools (including colleges and universities), and worksites.[1, 4, 5, 6]

Educational strategies may include efforts to increase health awareness, communication, and skill building. Policy strategies are those laws, regulations, formal and informal rules, and understandings adopted on a collective basis to guide individual and collective behavior.[2, 7, 8, 9] These include health-friendly policies designed to encourage healthful actions (for example, flex-time at worksites that enables employees to engage in physical activity, clinic hours that meet the needs of working people) and policies to discourage or limit unhealthy actions (for example, restrictions on the sale of tobacco products to minors as a way to discourage youth tobacco use). Environmental strategies are measures that alter or control the legal, social, economic, and physical environment.[10] They make the environment more supportive of health and well-being (for example, increasing the accessibility of low-fat foods in grocery stores to encourage a low-fat diet). Environmental measures also are used to discourage actions that are not supportive of health (for example, the removal of cigarette vending machines from public buildings to discourage smoking).

These educational, policy, and environmental strategies are effective when used in as many settings as appropriate.[5] Settings—schools, worksites, health care facilities, and the community—serve as channels to reach desired audiences as well as apply strategies in as wide a population as possible. These settings also provide major social structures for intervening at the policy level to facilitate healthful choices.[10]

The school setting. The importance of including health instruction in education curricula has been recognized since the early 1900s.[11] In 1997, the Institute of Medicine advised that students should receive the health-related education and services necessary for them to derive maximum benefit from their education and enable them to become healthy, productive adults.[12]

The school setting, ranging from preschool to university, is an important avenue to reach the entire population and specifically to educate children and youth. Schools have more influence on the lives of youth than any other social institution except the family, and provide a setting in which friendship networks develop, socialization occurs, and norms that govern behavior are developed and reinforced. Each school day about 48 million youth in the United States attend almost 110,000 elementary and secondary schools for about 6 hours of classroom time. More than 95 percent of all youth aged 5 to 17 years are enrolled in school.

Schools are second only to homes among the primary places that children spend their time and thus are one of the significant places where children may be exposed to potentially harmful environmental conditions. (See Focus Area 8. Environmental Health.) During high school, national dropout rates average 12 percent. Prior to high school, dropout is almost nonexistent.[13, 14, 15] Because healthy children learn better than children with health problems, schools also have an interest in addressing the health needs of students. Although schools alone cannot be expected to address the health and related social problems of youth, they can provide, through their climate and curriculum, a focal point for efforts to reduce health-risk behaviors and improve the health status of youth.[16]

In 1990, the key elements of school health education were identified: a documented, planned, and sequential program of health education for students in kindergarten through grade 12; a curriculum that addresses and integrates education about a range of categorical health problems and issues at developmentally appropriate ages; activities to help young persons develop the skills they will need to avoid risky behaviors; instruction provided for a prescribed amount of time at each grade level; management and coordination in each school by an education professional trained to implement the program; instruction from teachers who have been trained to teach the subject; involvement of parents, health professionals, and other concerned community members; and periodic evaluation, updating, and improvement.[17]

More than 12 million students currently are enrolled in the Nation's 3,600 colleges and universities.[18] Thus, colleges and universities are important settings for reducing health-risk behaviors among many young adults. Health clinics at the postsecondary level can help empower students to take responsibility for their own health through education, prevention, early detection, and treatment. In addition, colleges and universities can play an important role in eliminating racial and ethnic disparities and other inequalities in health outcomes by influencing how people think about these issues and providing a place where opinions and behaviors contributing to these factors can be addressed.

The worksite setting. The growing cost of health care combined with the increase of preventable acute and chronic illnesses drive the continuing need for comprehensive worksite health promotion programs. (See Focus Area 20. Occupational Safety and Health.) The worksite setting provides an opportunity to implement educational programs and policy and environmental actions that support health, which benefit managers, employees and, ultimately, the community as a whole. These programs have become an integral part of corporate plans to reduce health care costs, improve worker morale, decrease absenteeism, and improve behaviors associated with increased worker productivity.[19]
Although reductions in health risks have been achieved through many worksite

health promotion programs, risk reduction for hourly and part-time workers and companies with fewer than 50 employees has lagged.[20]

The health care setting. In health care facilities, including hospitals, medical and dental clinics, and offices, health care providers often see their patients at a "teachable moment." Individualized education and counseling by health care providers at these "moments" in these settings have been shown to have positive and clinically significant effects on behavior in persons with chronic and acute conditions.[19] (See Focus Area 1. Access to Quality Health Services.) Providers must be cognizant of these opportunities and prepared to provide appropriate patient education. Institutions that employ providers also must be cognizant and allow sufficient time and training for patient education and counseling to occur.

The health care setting is critical to the delivery of health education and health promotion because of the dramatic change it has undergone in the past 10 years. In 1989, 18 percent[21] of the population reported they were covered by some form of managed care; in 1996 that number had risen to 29 percent, an increase of 57 percent. As of June 1999, the number had jumped to 70 percent. As of January 1, 1997, more than 4.9 million Medicare beneficiaries were enrolled in managed care plans, accounting for 13 percent of the total Medicare program and representing a 108 percent increase in managed care enrollment since 1993. As of June 30, 1998, over 16 million or 54 percent of Medicaid beneficiaries were enrolled in managed care programs.

This growth in enrollment in managed care plans has been accompanied by the development of the Health Plan Employer Data and Information Set (HEDIS) and a set of common data indicators to examine MCO performance by the National Committee on Quality Assurance (NCQA). The latest version of HEDIS requires MCOs to report on more than 50 prevention-oriented indicators.[22] With the increasing marketing importance of HEDIS to MCOs, there will be greater demands for MCO health promotion programs to address HEDIS-related issues.[23] As a result, increased attention must be devoted to examining patient satisfaction with health promotion programs in health care organizations.

The community setting. While health promotion in schools, health care centers, and worksites provides targeted interventions for specific population groups, community-based programs can reach the entire population. Broad public concern and support are vital to the functioning of a healthy community and to ensure the conditions in which people can be healthy.[24] Included in the community setting are public facilities; local government and agencies; and social service, faith, and civic organizations that provide channels to reach people where they live, work, and play. Places of worship may be a particularly important setting for health promotion initiatives and they may effectively reach some underserved populations. These groups and organizations also can be strong advocates for educational, policy, and environmental changes throughout the community. Approaches to prevention must account for the character of the community and ensure community participation in the process.[3] Valuable and effective health benefits of community-based approaches have been demonstrated by community interventions that have served a variety of ethnic and socioeconomic population groups.[3, 7, 25] Community-based approaches in conjunction with targeted approaches in schools, health care, and worksites increase the likelihood for success to improve personal and community health.

A community health promotion program should include the following:

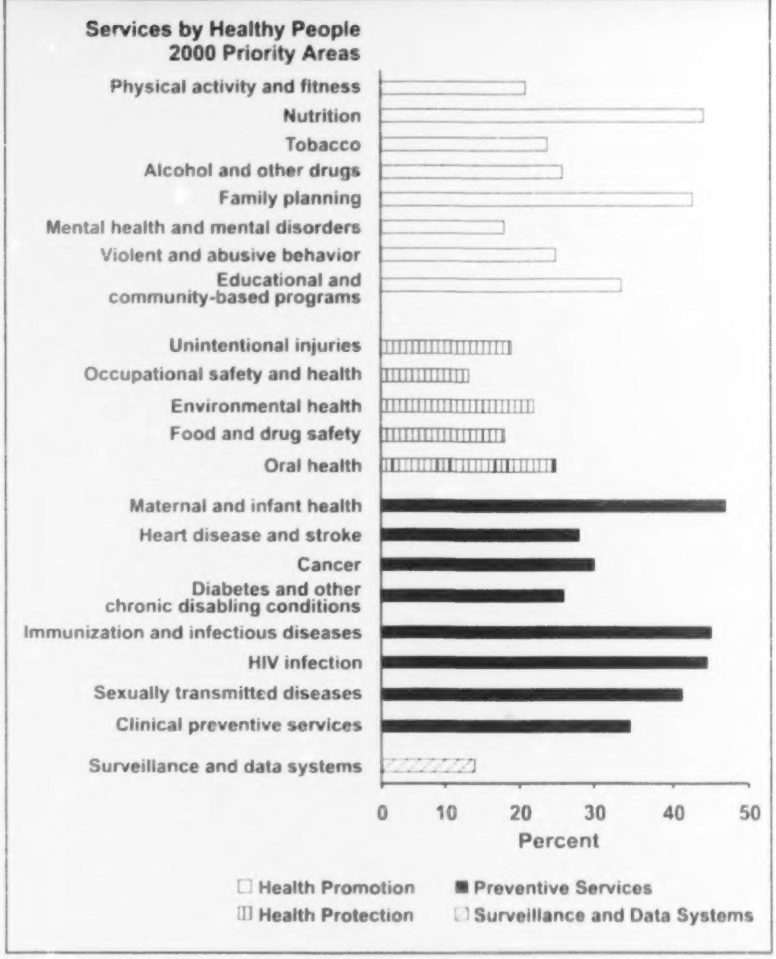
- Involved community participation with representation from at least three of the following community sectors: government, education, business, faith organizations, health care, media, voluntary agencies, and the public.
- Community assessment to determine community health problems, resources, and perceptions and priorities for action.
- Measurable objectives that address at least one of the following: health outcomes, risk factors, public awareness, or services and protection.
- Monitoring and evaluation processes to determine whether the objectives are reached.
- Comprehensive, multifaceted, culturally relevant interventions that have multiple targets for change—individuals (for example, racial and ethnic, age, and socioeconomic groups), organizations (for example, worksites, schools, faith), and environments (for example, local policies and regulations)—and multiple approaches to change, including education, community organization, and regulatory and environmental reforms.

Schools are natural settings for reaching children and youth while worksites reach the majority of adults. Efforts to reach older adults necessarily must involve the community at large. Senior centers have been established in most communities and provide a range of services, including health promotion programs for adults aged 60 years and older. Several types of housing arrangements designed specifically for older adults also can be found in many communities, including congregate housing, life care facilities, and retirement villages. These usually offer some mix of health care, recreational programs, and other types of activities and services. Health promotion strategies, policies, and educational approaches have been developed for aging populations.[26]

Disparities

The U.S. population is composed of many diverse groups. Evidence indicates a persistent disparity in the health status of racially and culturally diverse populations as compared with the overall health status of the U.S. population. Over the next decade, the composition of the Nation will become more racially and ethnically diverse, thereby increasing the need for effective prevention programs tailored to specific community needs. Poverty, lack of adequate access to quality health services, lack of culturally and linguistically competent health services, and lack of preventive health care also are underlying factors that must be addressed. (See Focus Area 1. Access to Quality Health Services.) Given these disparities, the need for appropriate interventions is clear.

Proportion of Local Health Departments Providing Culturally and Linguistically Appropriate Services
(United States, 1996–97)



Source: CDC, NCHS. *Healthy People 2000 Review 1998–99*, pp. 96-97.

Effective prevention programs in diverse communities must be tailored to community needs and take into consideration factors concerning individuals, such as disability status, sexual orientation, and gender appropriateness, which also play a significant role in determining health outcomes, behaviors, use patterns, and attitudes across age, racial, and ethnic groups. For example, women often are the health care decisionmakers and caregivers in their families and in their communities. When provided with enabling services and health promotion and prevention information, they can make better health choices and better navigate the health care system to get the information and services they and their families need.

Opportunities

Health promotion programs need to be sensitive to the diverse cultural norms and beliefs of the people for whom the programs are intended. This is a continuing challenge as the Nation's population becomes increasingly diverse. To ensure that interventions are culturally appropriate, linguistically competent, and appropriate for the needs of racial, ethnic, gender, sexual orientation, disability status, and age groups within the community, members of the populations served and their gatekeepers must be involved in the community assessment and planning process.

Community assessment helps to identify the cultural traditions and beliefs of the community and the education, literacy level, and language preferences necessary for the development of appropriate materials and programs. In addition, a community assessment can help identify levels of social capital and community capacity. Such assessments help identify the skills, resources, and abilities needed to manage health improvement programs in communities.[5, 27]

Educational and community-based programs must be supported by accurate, appropriate, and accessible information derived from a science base. Increasing evidence supports the efficacy and effectiveness of health education and health promotion in schools, worksites, health care facilities, and community-based programming.[8] Gaps in research include the dissemination and diffusion of effective programs, new technologies, policies, relationships between settings, and approaches to disadvantaged and special populations.[10]

Communities need to be involved as partners in conducting research ensuring that the content of the prevention efforts developed are tailored to meet the needs of the communities and populations being served. Communities also need to be involved as equal partners in research, to enhance the appropriateness and sustainability of science-based interventions and prevention programs and ensure that the lessons of research are transferred back to the community. Sustainability is necessary for successful research to be translated into programs of lasting benefit to communities.

The importance of social ecology on behavior and the successes of environmental and policy approaches to health promotion and disease prevention need further documentation. Techniques to evaluate community processes and community health improvement methods and models need to be refined and disseminated so that other communities can learn from and duplicate successful strategies. Issues of partnering and the role of collaborative efforts to increase the capacity of individuals and communities to achieve long-term outcomes and improvements in health status are not fully understood[27] and should be evaluated. Mechanisms need to be developed to share what is learned in an appropriate and timely manner with communities.

Interim Progress Toward Year 2000 Objectives

Progress toward the 14 educational and community-based program objectives in Healthy People 2000 is mixed. Improvements have been made in the number of worksites that offer health promotion activities and in the proportion of hospitals that offer patient education programs. New information from the National College Health Risk Behavior Survey shows that college students are receiving information on health topics such as human immunodeficiency virus (HIV) and sexually transmitted disease prevention. High school completion rates have not changed from their baseline. Participation in health promotion activities by hourly workers over age 18 exceeds the target. Baseline data are available for older adults participating in health promotion activities and on counties with programs for certain racial and ethnic populations.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Educational and Community-Based Programs

Goal: Increase the quality, availability, and effectiveness of educational and community-based programs designed to prevent disease and improve health and quality of life.

Number	Objective
School Setting	
7-1	High school completion
7-2	School health education
7-3	Health-risk behavior information for college and university students
7-4	School nurse-to-student ratio
Worksite Setting	
7-5	Worksite health promotion programs
7-6	Older adult participation in employer-sponsored health promotion activities
Health Care Setting	
7-7	Patient and family education
7-8	Satisfaction with patient education
7-9	Health care organization sponsorship of community health promotion activities
Community Setting and Select Populations	
7-10	Community health promotion programs
7-11	Culturally appropriate community health promotion programs
7-12	Older adult participation in community health promotion activities

School Setting

7-1. Increase high school completion.

Target: 90 percent.

Baseline: 85 percent of persons aged 18 to 24 years had completed high school in 1998.

Target setting method: Consistent with National Education Goals Panel-Goals 2000.

Data sources: Current Population Survey, U.S. Department of Commerce, Bureau of the Census.

Persons Aged 18 to 24 Years, 1998 (unless noted)	Completed High School Percent
TOTAL	85
Race and ethnicity	
American Indian or Alaska Native	85
Asian or Pacific Islander	94
Asian	94
Native Hawaiian and other Pacific Islander	DSU
Black or African American	81
White	85
Hispanic or Latino	63
Not Hispanic or Latino	DNA
Black or African American	81
White	90
Gender	
Female	87
Male	83
Family income level	
Poor	DNA
Near poor	DNA
Middle/high income	DNA

Persons Aged 18 to 24 Years, 1998 (unless noted)	**Completed High School** Percent
Disability status	
Persons with disabilities	79 (1995)
Persons without disabilities	86 (1995)

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Dropping out of school is associated with delayed employment opportunities, poverty, and poor health. During adolescence, dropping out of school is associated with multiple social and health problems, including substance abuse, delinquency, intentional and unintentional injury, and unintended pregnancy. Some researchers suggest that the antecedents of drug and alcohol problems, school dropout, delinquency, and a host of other problems can be identified in the early elementary grades, long before the actual problems manifest themselves. These antecedents include low academic achievement and low attachment to school, adverse peer influence, inadequate family management and parental supervision, parental substance abuse, sensation-seeking behavior, and diminished personal capabilities. Children who perform poorly in school, are more than a year behind their modal grade, and are chronically truant are more likely to exhibit risk behaviors and experience serious problems in adolescence. Finally, risk of these outcomes is increased if children fail to form meaningful social bonds to positive adult and peer role models with whom they interact at school or in the community. If high school dropout rates are addressed as part of the Nation's health promotion and disease prevention agenda, unwarranted risks of problem behavior may be reduced and the health of young people improved.

The target of 90 percent set for this objective is consistent with the National Education Goal to increase the high school graduation rate to at least 90 percent. A National Education Objective under that goal is to eliminate the gap in high school graduation rates between racial and ethnic minority and nonminority students. In 1998, only 63 percent of Hispanic or Latino and 81 percent of African American youth aged 18 to 24 years had completed high school, compared to a completion rate of 90 percent for white, non-Hispanic youth.

7-2. Increase the proportion of middle, junior high, and senior high schools that provide comprehensive school health education to prevent health problems in the following areas: unintentional injury; violence; suicide; tobacco use and addiction; alcohol or other drug use; unintended pregnancy, HIV/AIDS, and STD infection; unhealthy dietary patterns; inadequate physical activity; and environmental health.

Objective	Schools Providing Comprehensive School Health Education in Priority Areas	1994 Baseline	2010 Target
		Percent	
7-2a.	**Summary objective** (all components)	28	70
	Specific objectives (components to prevent health problems in the following areas):		
7-2b.	Unintentional injury	66	90
7-2c.	Violence	58	80
7-2d.	Suicide	58	80
7-2e.	Tobacco use and addiction	86	95
7-2f.	Alcohol and other drug use	90	95
7-2g.	Unintended pregnancy, HIV/AIDS, and STD infection	65	90
7-2h.	Unhealthy dietary patterns	84	95
7-2i.	Inadequate physical activity	78	90
7-2j.	Environmental health	60	80

Target setting method: 150 percent improvement.

Data source: School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP.

7-3. Increase the proportion of college and university students who receive information from their institution on each of the six priority health-risk behavior areas.

Target: 25 percent.

Baseline: 6 percent of undergraduate students received information from their college or university on all six topics in 1995: injuries (intentional and unintentional), tobacco use, alcohol and illicit drug use, sexual behaviors that cause unintended pregnancies and sexually transmitted diseases, dietary patterns that cause disease, and inadequate physical activity.

Target setting method: Better than the best.

Data source: National College Health Risk Behavior Survey, CDC, NCCDPHP.

Undergraduates, 1995	**Received Information on Six Priority Health-Risk Behavior Areas** Percent
TOTAL	6
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	8
White	6
Hispanic or Latino	5
Not Hispanic or Latino	DNA
Black or African American	8
White	6
Gender	
Female	6
Male	6
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC
Select populations	
Sexual orientation	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The School Health Education Study[38] conducted during the 1960s identified 10 conceptual areas that have traditionally served as the basis of health education curricula. Subsequently, six categories of behaviors have been identified as responsible for more than 70 percent of illness, disability, and death among adolescents and young adults. These categories, which should be the primary focus of school health education, are injuries (unintentional and intentional); tobacco use; alcohol and illicit drug use; sexual behaviors that cause unintended pregnancies and sexually transmitted diseases; dietary patterns that cause disease; and inadequate physical activity.[29] While unintentional and intentional injuries are grouped together, the prevention program and policy implications for each are distinct, given the differences in the risk behaviors and related health outcomes. In addition to the 6 behavior categories, environmental health (recognized influence on personal and community health), mental and emotional health, personal health, and consumer health are among the 10 conceptual areas being added to track the influence of these factors over the next 10 years.

The overall goal of the National Health Education Standards[30] for youth is to achieve health literacy—the capacity to obtain, interpret, and understand basic health information and services and the competence to use such information and services to enhance health. Research has shown that for health education curricula to affect priority health-risk behaviors among adolescents, effective strategies, considerable instructional time, and well-prepared teachers are required. To attain this objective, States and school districts need to support effective health education with appropriate policies, teacher training, effective curricula, and regular progress assessment. In addition, the support of families, peers, and the community at large is critical to long-term behavior change among adolescents. Text about the contributions comprehensive school health education can make in achieving objectives can be found in the appropriate priority area chapters.

Health education and health promotion activities also can be conducted in postsecondary settings and reach the Nation's future leaders, teachers, corporate executives, health professionals, and public health personnel. Personal involvement in a health promotion program can educate future leaders about the importance of health and engender a commitment to prevention.

In 1995, 23 percent of undergraduate students reported receiving information on unintentional injuries, 38 percent on intentional injuries, 49 percent on alcohol and other drug use, 55 percent on unintended pregnancy, HIV/AIDS, and STD infection; 30 percent on unhealthy dietary patterns; and 36 percent on inadequate physical activity.[31]

7-4. Increase the proportion of the Nation's elementary, middle, junior high, and senior high schools that have a nurse-to-student ratio of at least 1:750.

Target and baseline:

Objective	**Increase in Schools With Nurse-to-Student Ratio of at Least 1:750**	**1994 Baseline**	**2010 Target**
		Percent	
7-4a.	All middle, junior high, and senior high schools	28	50
7-4b.	Senior high schools	26	50
7-4c.	Middle and junior high schools	32	50
7-4d.	Elementary schools	**Developmental**	

Target setting method: 79 percent improvement for all schools combined.

Data source: School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP. Data for elementary schools are developmental.

The importance of providing health services to students in schools is widely accepted.[12] Such services began over 100 years ago to control communicable disease and reduce absenteeism. Over the years, school health services have evolved to keep pace with changes in the health care, social, and educational systems in the United States.[32] Current models of school health services reflect an understanding that children's physical and mental health are linked to their abilities to succeed academically and socially in the school environment.[15]

School nurses serve 48 million youth in the Nation's schools. School nurses assess student health and development, help families determine when medical services are needed, and serve as a professional link with physicians and community resources. Nurses manage care and provide services to support and sustain school attendance and academic achievement. An LPN or RN is an essential component of a healthy school. The ratio of 1 school nurse per 750 students should be improved if many students with special needs are enrolled.[33] For children with disabilities, the nurse is an essential resource. These children are dependent on daily medication, nursing procedures, or special diets for normal function.

Worksite Setting

7-5. Increase the proportion of worksites that offer a comprehensive employee health promotion program to their employees.

Objective	Increase in Worksites Offering a Comprehensive Employer-Sponsored Health Promotion Program	1999 Baseline	2010 Target
		Percent	
7-5a.	Worksites with fewer than 50 employees	**Developmental**	
7-5b.	Worksites with 50+ employees	95	100
7-5c.	Worksites with 50 to 99 employees	94	100
7-5d.	Worksites with 100 to 249 employees	96	100
7-5e.	Worksites with 250 to 749 employees	98	100
7-5f.	Worksites with 750+ employees	99	100

Target setting method: Better than the best.

Data source: 1999 National Worksite Health Promotion Survey, Association for Worksite Health Promotion (AWHP). Note: Data do not reflect complete definition for comprehensive worksite health promotion program; for explanation, see *Tracking Healthy People 2010*.

7-6. Increase the proportion of employees who participate in employer-sponsored health promotion activities.

Target: 50 percent.

Baseline: 28 percent of employees aged 18 years and older participated in employer-sponsored health promotion activities in 1994.

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

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Employees Aged 18 Years and Older, 1994	**Participation in Employer-Sponsored Health Promotion Activities** Percent
TOTAL	28
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	33
White	28
Hispanic or Latino	16
Not Hispanic or Latino	30
Black or African American	33
White	30
Gender	
Female	34
Male	27
Family income level	
Poor	10
Near poor	22
Middle/high income	35
Education level (aged 25 years and older)	
Less than high school	17
High school graduate	33
At least some college	37
Disability status	
Persons with activity limitations	24
Persons without activity limitations	29
Select populations	
Employees at worksites with 50 plus employees	DNA
Employees at worksites with <50 employees	DNC

Employees Aged 18 Years and Older, 1994	Participation in Employer-Sponsored Health Promotion Activities Percent
Geographic	
Urban	27
Rural	30
Insurance status	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

By 1999, 95 percent of employers with more than 50 employees reported that they offered at least one health promotion activity.[20] While the growth in worksite health promotion programming since 1985 has been remarkable, many programs lack comprehensive design or sufficient duration and therefore are potentially limited in their impact on employee health and well-being.[34] Participation rates in worksite health promotion programs are generally low. Most worksite statistics indicate that enrollees in worksite health promotion programs tend to be salaried employees whose general health is better than average. Employees working in administrative support, service, crafts, and trades often have greater health risks and higher rates of illness and injury than professional and administrative workers do. Contributing factors include differences in socioeconomic status, in the nature of the work, and in access to and extent of health insurance coverage, as well as exclusion of those workers from worksite health promotion programs. This exclusion may be an unintentional result of failing to market the program effectively to them.[35] Optimally, worksite health promotion efforts should be part of a comprehensive occupational health and safety program.

More than 80 percent of private-sector employees work in organizations of fewer than 50 people.[36] Over the next decade, strategies need to be developed to provide workers in these settings access to health promotion programs.[37, 38] Limited purchasing power can make the provision of health promotion services difficult for worksites with only a few employees. Employers can take advantage of community agency programs and services through outsourcing and by collaborating with other small worksites to purchase services, such as employee assistance programs and health insurance for preventive health services, to increase their purchasing power and benefits offered to their employees.[38]

Collaboration between trade and professional organizations is needed to identify new opportunities for worksite health promotion. Employee involvement to define and manage worksite health promotion activities can be especially valuable to address resource constraints among smaller employers while simultaneously enhancing program success.[38]

Health Care Setting

7-7. (Developmental) Increase the proportion of health care organizations that provide patient and family education.

Potential data source: Joint Commission on Accreditation of Healthcare Organizations (JCAHO) Survey.

7-8. (Developmental) Increase the proportion of patients who report that they are satisfied with the patient education they receive from their health care organization.

Potential data source: Press Ganey.

7-9. (Developmental) Increase the proportion of hospitals and managed care organizations that provide community disease prevention and health promotion activities that address the priority health needs identified by their community.

Potential data source: Annual Survey, American Hospital Association.

The concept of increased consumer protection in the health care industry, particularly in the form of a Consumers' Bill of Rights and Responsibilities, is gaining support. These protections include consumers' rights to accurate, easily understood information related to choice of a health plan, its benefits, availability of specialty care, and confidentiality of medical records. However, the right to comprehensive patient and family education is missing from this list. Two distinctive characteristics of health care settings underscore their importance to promote patient and family education: improved health is a primary objective; and health care providers generally are considered credible sources of information.[10] The interaction between these two factors helps create an environment conducive to effective patient and family education programs and activities. The positive and clinically significant effects of patient education and counseling of persons with chronic and acute conditions are well-documented; however, the amount and types of health promotion and disease prevention activities offered by MCOs to their participating employers vary widely.[29]

On the national level, about 70 percent of employees are covered by some form of managed care. The growth of MCOs is expected to increase. For example, as of January 1, 1997, more than 4.9 million Medicare beneficiaries were enrolled in managed care plans, accounting for 13 percent of the total Medicare program and representing a 108 percent increase in managed care enrollment since 1993.[30] Another important factor is the emerging role of the National Committee on Quality Assurance (NCQA) and its development of the Health Plan Employer Data and

Information Set (HEDIS) and set of common data indicators for examining performance of MCOs. The latest version requires MCOs to report on more than 50 prevention-oriented indicators, largely secondary and tertiary prevention-related issues.[22] With the increasing marketing importance of HEDIS to MCOs, there will be greater demands for health promotion to address HEDIS-related issues, potentially leaving critical programming gaps.[23] As a result, increased public attention must be devoted to examining patient satisfaction in health care organizations.

Community health promotion services provided by hospitals and MCOs are growing. This is illustrated by the expansion of Federal and State managed care reform legislation directed at the creation of a core set of prevention activities across MCOs.[23] Despite the different motivations and strategic objectives of public health and managed care, they share a mutual interest to improve the health of communities and specific populations within communities. Collaboration between managed care plans and public health agencies is a logical consequence of the health promotion objectives shared by these organizations.[40] Additionally, a number of Federal public health agencies are developing collaborative relationships with the managed care community on issues of clinical preventive services and prevention surveillance and research.[41]

Community Setting and Select Populations

7-10. (Developmental) Increase the proportion of Tribal and local health service areas or jurisdictions that have established a community health promotion program that addresses multiple Healthy People 2010 focus areas.

Potential data sources: Special Survey, Association of State and Territorial Directors of Health Promotion and Public Health Education (ASTDHPPHE) Survey; IHS.

This objective reflects the need for comprehensive and multifaceted health promotion and community health improvement activities at the State and local levels. A 1996 review of the literature on 135 urban health promotion programs conducted between 1980 and 1995 found that only 41 percent identified a specific model for program planning and implementation.[42] In addition, community members constituted the smallest percentage of those involved in the local effort, and very little tailoring to the population and population groups served was noted. These efforts also had a strong focus on the individual rather than the population.[42]

This objective includes activities conducted through local health departments as well as those conducted by other community-based organizations, particularly in those communities not served by a local health department. Activities such as Assessment Protocol for Excellence in Public Health (APEX/PH); Healthy Cities, Healthy Communities; and Planned Approach to Community Health (PATCH) recognize the need for community involvement and mobilization as basic methods for planning, implementing, and evaluating educational and community-based programs. Public health departments, community health centers, faith communities, civic organizations, voluntary health organizations, businesses, worksites, schools, universities, Area Health Education Centers (AHECs), and healthy city or community groups are a few of the organizations that plan and deliver such programs in the United States.

Identifying the use of established health promotion planning and identification models provides more information on strategically planned and implemented programs as opposed to single-method or noncomprehensive approaches considered less productive.

7-11. Increase the proportion of local health departments that have established culturally appropriate and linguistically competent community health promotion and disease prevention programs for racial and ethnic minority populations.

Target and baseline:

Objective	Local Health Department Community Health Promotion and Disease Prevention Programs That Are Culturally and Linguistically Competent	1996–97 Baseline	2010 Target
		Percent	
7-11a.	Access to quality health services	**Developmental**	
	Clinical preventive services	35	*
7-11b.	Arthritis, osteoporosis, and chronic back conditions	**Developmental**	
7-11c.	Cancer	30	50
	Diabetes and chronic disabling conditions	26	*
7-11d.	Chronic kidney disease	**Developmental**	
7-11e.	Diabetes	**Developmental**	
7-11f.	Disability and secondary conditions	**Developmental**	
7-11g.	Educational and community-based programs	33	50
7-11h.	Environmental health	22	50
7-11i.	Family planning	42	50
	Food and drug safety	18	*
7-11j.	Food safety	**Developmental**	
7-11k.	Medical product safety	**Developmental**	
7-11l.	Health communication	**Developmental**	
7-11m.	Heart disease and stroke	28	50

Objective	Local Health Department Community Health Promotion and Disease Prevention Programs That Are Culturally and Linguistically Competent	1996–97 Baseline	2010 Target
		Percent	
7-11n.	HIV	45	50
7-11o.	Immunizations and infectious diseases	48	50
7-11p.	Injury and violence prevention	**Developmental**	
	Unintentional injuries	19	*
	Violent and abusive behavior	25	*
7-11q.	Maternal, infant (and child) health	47	50
7-11r.	Mental health (and mental disorders)	18	50
7-11s.	Nutrition and overweight	44	50
7-11t.	Occupational safety and health	13	50
7-11u.	Oral health	25	50
7-11v.	Physical activity and fitness	21	50
7-11w.	Public health infrastructure	**Developmental**	
	Surveillance and data systems	14	*
7-11x.	Respiratory diseases	**Developmental**	
7-11y.	Sexually transmitted diseases	41	50
7-11z.	Substance abuse (alcohol and other drugs)	26	50
7-11aa.	Tobacco use	24	50
7-11bb.	Vision and hearing	**Developmental**	

*These are Healthy People 2000 priority areas that are not applicable to Healthy People 2010.

Target setting method: Percentage improvement varies by program.

Data source: National Profile of Local Health Departments, National Association of City and County Health Organization (NACCHO).

Over the next decade, the Nation's population will become even more diverse. Mainstream health education activities often fail to reach select populations.[43] This may contribute to select and disadvantaged communities lagging behind the overall U.S. population on virtually all health status indicators. In 1991, an estimated 78,643 excess deaths occurred among African Americans and an additional 4,485 among Hispanics or Latinos.[44] Approximately 75 percent of these excess deaths occurred in seven categories, all of which had contributing factors that can be controlled or prevented: cancer, cardiovascular disease, cirrhosis, diabetes, HIV or AIDS, homicide, and unintentional injuries. Special efforts are needed to develop and disseminate culturally and linguistically appropriate health information to overcome the cultural differences and meet the special language needs of these population groups.

7-12. Increase the proportion of older adults who have participated during the preceding year in at least one organized health promotion activity.

Target: 90 percent.

Baseline: 12 percent of adults aged 65 years and older participated during the preceding year in at least one organized health promotion activity in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 65 Years and Older, 1995*	One or More Health Promotion Activity Past Year Percent
TOTAL	12
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DSU
White	12
Hispanic or Latino	DSU
Not Hispanic or Latino	12
Black or African American	DSU
White	12
Gender	
Female	14
Male	9
Family income level	
Poor	DSU
Near poor	9
Middle/high income	15

Adults Aged 65 Years and Older, 1995*	One or More Health Promotion Activity Past Year
	Percent
Education level	
Less than high school	7
High school	11
At least some college	19
Disability status	
Persons with activity limitations	10
Persons without activity limitations	12

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Adults aged 65 years or older numbered 33.9 million in 1996. They represented 12.8 percent of the U.S. population, about one in every eight Americans. More than any other age group, older adults are seeking health information and are willing to make changes to maintain their health and independence. Prevention efforts should focus on modifiable risk behaviors and early diagnosis and match the leading problems by age (for example, aged 60 or 65 to 74 years, 75 to 84 years, and 85 years and older) and functional status. Programs should address these health issues through multiple strategies, including education, counseling, screening/chemoprophylaxis, environmental enhancements, and protective services. As with any successful program, those for older adults need to be tailored to the audience.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-3. Counseling about health behaviors

Arthritis, Osteoporosis, and Chronic Back Conditions

2-8. Arthritis education

3. Cancer

3-10. Provider counseling about preventive measures

5. Diabetes

5-1. Diabetes education

6. Disability and Secondary Conditions

6-9. Children and youth with disabilities included in regular education programs

6-13. Surveillance and health promotion programs

9. Family Planning

9-11. Pregnancy prevention education

11. Health Communication

11-6. Satisfaction with providers' communication skills

16. Maternal, Infant, and Child Health

16-7. Childbirth classes

17. Medical Product Safety

17-3. Provider review of medications taken by patients

17-5. Receipt of useful counseling from prescribers and dispensers

18. Mental Health and Mental Disorders

18-12. State tracking of consumer satisfaction

19. Nutrition and Overweight

19-16. Worksite promotion of nutrition education and weight management

19-17. Nutrition counseling for medical conditions

20. Occupational Safety and Health

20-9. Worksite stress reduction programs

22. Physical Activity and Fitness

22-8. Physical education requirement in schools

22-9. Daily physical education in schools

22-10. Physical activity in physical education class

22-12. School physical activity facilities

22-13. Worksite physical activity and fitness

24. Respiratory Diseases

24-6. Patient education

26. Substance Abuse

26-23. Community partnerships and coalitions

27. Tobacco Use

27-11. Smoke-free and tobacco-free schools

27-12. Worksite smoking policies

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Community: A specific group of people, often living in a defined geographical area, who share a common culture, values, and norms and who are arranged in a social structure according to relationships the community has developed over a period of time.[45]

Community-based program: A planned, coordinated, ongoing effort operated by a community that characteristically includes multiple interventions intended to improve the health status of members of the community.

Community capacity: The characteristics of communities that affect their ability to identify, mobilize, and address social and public health problems.[46, 47]

Community health planning or community health improvement process: Helps a community mobilize to collect and use local data; set health priorities; and design, implement, and evaluate comprehensive programs that address community health and quality of life issues.[1]

Community health promotion program: Includes all of the following: (1) involved community participation with representatives from at least three of the following community sectors: government, education, business, faith organizations, health care, media, voluntary agencies, and the public; (2) community assessment, guided by a community assessment and planning model, to determine community health problems, resources, perceptions, and priorities for action; (3) targeted and measurable objectives to address any of the following: health outcomes, risk factors, public awareness, services, and protection; (4) comprehensive, multifaceted, culturally relevant interventions that have multiple targets for change; and (5) monitoring and evaluation processes to determine whether the objectives are reached.

Comprehensive worksite health promotion programs: Refers to programs that contain the following elements: (1) health education that focuses on skill development and lifestyle behavior change in addition to information dissemination and awareness building, preferably tailored to employees' interests and needs; (2) supportive social and physical work environments, including established norms for healthy behavior and policies that promote health and reduce the risk of disease, such as worksite smoking policies, healthy nutrition alternatives in the cafeteria and vending services, and opportunities for obtaining regular physical activity; (3) integration of the worksite program into the organization's administrative structure; (4) related programs, such as employee assistance programs; and (5) screening programs, preferably linked to medical care service delivery to ensure followup and appropriate treatment as necessary and to encourage adherence. Optimally, these efforts should be part of a comprehensive occupational health and safety program.[37, 48]

Culturally appropriate: Refers to an unbiased attitude and organizational policy that values cultural diversity in the population served. Reflects an understanding of diverse attitudes, beliefs, behaviors, practices, and communication patterns that could be attributed to race, ethnicity, religion, socioeconomic status, historical and social context, physical or mental ability, age, gender, sexual orientation, or generational and acculturation status. Includes an awareness that cultural differences may affect health and the effectiveness of health care delivery. Knowledge of disease prevalence in specific cultural populations, whether defined by race, ethnicity, socioeconomic status, physical or mental ability, gender, sexual orientation, age, disability, or habits.

Excess deaths: The statistically significant difference between the number of deaths expected and the number that actually occurred.

Health: A state of physical, mental, and social well-being and not merely the absence of disease and infirmity.

Health care organizations: Included are hospitals, managed care organizations, home health organizations, long-term care facilities, and community-based health care providers.

Health education: Any planned combination of learning experiences designed to predispose, enable, and reinforce voluntary behavior conducive to health in individuals, groups, or communities.[40]

Health literacy: The capacity to obtain, interpret, and understand basic health information and services and the competence to use such information and services to enhance health.[40]

Health promotion: Any planned combination of educational, political, regulatory, and organizational supports for actions and conditions of living conducive to the health of individuals, groups, or communities.[40]

Health promotion activity: Broadly defined to include any activity that is part of a planned health promotion program, such as implementing a policy to create a smoke-free workplace, developing walking trails in communities, or teaching the skills needed to prepare healthy meals and snacks.

Healthy community: A community that is continuously creating and improving those physical and social environments and expanding those community resources that enable people to mutually support each other in performing all the functions of life and in developing to their maximum potential.[50]

Healthy public policy: Characterized by an explicit concern for health and equity in all areas of policy and by an accountability for health impact. The main aim of healthy public policy is to create a supportive environment to enable people to lead healthy lives by making healthy choices possible and easier for citizens. It makes social and physical environments health enhancing.[45]

High school completion rate: Refers to the percentage of persons aged 18 to 24 years who are not currently enrolled in high school and who report that they have received a high school diploma or the equivalent, such as a General Education Development certificate.

Linguistically competent: Refers to skills for communicating effectively in the native language or dialect of the targeted population, taking into account general educational levels, literacy, and language preferences.

Local health service areas: Refers to local health jurisdictions and local health unit catchment areas.

Managed care organizations (MCOs): Refers to systems that integrate the financing and delivery of health care services to covered individuals by means of arrangements with selected providers to furnish health care services to members. Managed care includes health maintenance organizations, preferred provider organizations, and point-of-service plans.

Patient and family education: Refers to a planned learning experience using a combination of methods, such as teaching, counseling, skill building, and behavior modification, to promote patient self-management and patient and family empowerment regarding their health.

Postsecondary institutions: Includes 2- and 4-year community colleges, private colleges, and universities.

Quality of life: An expression that, in general, connotes an overall sense of well-being when applied to an individual and a pleasant and supportive environment when applied to a community. On the individual level, health-related quality of life (HRQOL) has a strong relationship to a person's health perceptions and ability to function. On the community level, HRQOL can be viewed as including all aspects of community life that have a direct and quantifiable influence on the physical and mental health of its members.[51]

School health education: Any combination of learning experiences organized in the school setting to predispose, enable, and reinforce behavior conducive to health or to prepare schoolaged children to be able to cope with the challenges to their health in the years ahead.[49]

Settings (worksites, schools, health care sites, and the community): Major social structures that provide channels and mechanisms of influence for reaching defined populations and for intervening at the policy level to facilitate healthful choices and address quality of life issues. Conceptually, the overall community, worksites, schools, and health care sites are contained under the broad umbrella of "community." Health promotion and health education may occur within these individual settings or across settings in a comprehensive, communitywide approach.[10]

Social capital: The process and conditions among people and organizations that lead to accomplishing a goal of mutual social benefit, usually characterized by four interrelated constructs: trust, cooperation, civic engagement, and reciprocity.[50]

Social ecology: Refers to the complex interactions among people and their physical and social environments and the effects of these interactions on the emotional, physical, and social well-being of individuals and groups.[52]

References

1. Centers for Disease Control and Prevention (CDC). *Planned Approach to Community Health: Guide for the Local Coordinator.* Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, CDC, National Center for Chronic Disease Prevention and Health Promotion, 1995.

2. Brownson, R.C.; Koffman, D.M.; Novotny, T.E.; et al. Environmental and policy interventions to control tobacco use and prevent cardiovascular disease. *Health Education Quarterly* 22:478-498, 1995.

3. Katz, M.F., and Kreuter, M.W. Community assessment and empowerment. In: Scutchfield, F.D., and Keck, C.W. (eds.). *Principles of Public Health Practice.* Washington DC: International Thomson Publishing, 1997, 147-156.

4. Goodman, R.M.; Speers, M.A.; McLeroy, K.; et al. An initial attempt to identify and define the dimensions of community capacity to provide a basis for measurement. *Health Education & Behavior* 25(3), 1998.

5. Steckler, A.; et al. Health education intervention strategies: Recommendations for future research. *Health Education Quarterly* 22:307-328, 1995.

6. Rootman, I.; Goodstadt, M.; Hyndman, B.; McQueen, D. et al. *Evaluation in Health Promotion Principles and Perspectives.* Copenhagen: World Health Organization, 1999.

7. Glanz, K.; et al. Environmental and policy approaches to cardiovascular disease prevention through nutrition: Opportunities for state and local action. *Health Education Quarterly* 22:512-527, 1995.

8. King, A.C.; et al. Environmental and policy approaches to cardiovascular disease prevention through physical activity: Issues and opportunities. *Health Education Quarterly* 22:499-511, 1995.

9. Speers, M.A., and Schmid, T.L. Policy and environmental interventions for the prevention and control of cardiovascular diseases. *Health Education Quarterly* 22:476-477, 1995.

10. Mullen, P.D.; Evans, D.; Forster, J.; et al. Settings as an important dimension in health education/promotion policy, programs, and research. *Health Education Quarterly* 22:329-345, 1995.

11. Commission on the Reorganization of Secondary Education. *Cardinal Principles of Secondary Education.* Bulletin 35. Washington, DC: Bureau of Education, 1918.

12. Institute of Medicine. *Schools and Health: Our Nation's Investment.* Washington, DC: National Academy Press, 1997.

13. National Center for Education Statistics. *Digest of Education Statistics, 1993.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, 1993.

14. National Center for Education Statistics. *Dropout Rates in the United States: 1993.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, 1994.

15. National Health Education Consortium. The relationship to learning: Healthy brain development. Principles and practices of student health. *School Health* 2:262-272, 1992.

16. Kann, L.; et al. The School Health Policies and Programs Study (SHPPS): Rationale for a nationwide status report on school health programs. *Journal of School Health* 65(8):291-294, 1995.

17. Marx, E.; Wooley, S.F.; and Northrop, D. (eds.). *Health is Academic: A Guide to Coordinated School Health.* New York: Teachers College Press, 1998.

18. Kominski, R., and Adams, A. *Educational Attainment in the United States: March 1993 and 1992.* Washington, DC: U.S. Bureau of the Census, 1994.

19. Gebhardt, D.L., and Crump, C.E. Employee fitness and wellness programs in the workplace. *American Psychologist* 45:262-271, 1990.

20. Association for Worksite Health Promotion. *1999 National Worksite Health Promotion Survey.* Northbrook, IL: the Association, 1999.

21. National Center for Health Statistics. Health U.S. 1999. With health and aging chartbook. Hyattsville, MD: the Center 1999.

22. National Committee for Quality Assurance. Retrieved December 15, 1999 http://www.NCQA.org/policy/HEDIS/HEDIS.com.

23. Chapman, L.S. Worksite health promotion in the managed care era. *The Art of Health Promotion* 1:1-7, 1998.

24. Institute of Health Promotion Research, University of British Columbia, and British Columbia Consortium for Health Promotion Research. *Study of Participatory Research in Health Promotion: Review and Recommendations for the Development of Participatory Research in Health Promotion in Canada.* Vancouver, British Columbia: The Royal Society of Canada, 1995.

25. Lacey, L.P.; et al. An urban, community-based cancer prevention screen and health education intervention in Chicago. *Public Health Reports* 104(6):536-541, 1989.

26. Hickey, T.; Speers, M.A.; and Prohaska, T.R. *Public Health and Aging.* Baltimore, MD: Johns Hopkins University Press, 1997.

27. Kreuter, M.W.; Lezin, N.A.; and Young, L.A. Community-based collaborative mechanisms: Implications for practitioners. *Health Promotion Practice,* 1(1):in press.

28. Sliepcevich, E. *School Health Education Study: A Summary Report.* Washington, DC: School Health Education Study, 1964.

29. Kann, L.; Kolbe, L.; and Collins, J. eds. Measuring the health behavior of adolescents: the Youth Risk Behavior Surveillance System. *Public Health Reports* 108(suppl):1-67, 1993.

30. Joint Committee on National Health Education Standards. *National Health Education Standards: Achieving Health Literacy.* Atlanta, GA: American Cancer Society, 1995.

31. CDC. Youth risk behavior surveillance: National college health risk behavior survey/United States. *Morbidity and Mortality Weekly Report* 46(55-6), 1997.

32. Lear, J.G. School-based services and adolescent health: Past, present, and future. *Adolescent Medicine: State of the Art Reviews* 7(2):163-180, 1996.

33. Proctor, S.; Lordi, S.; and Saiger, D. *School Nursing Practice: Roles and Standards*. Scarborough, ME: National Association of School Nurses, 1993.

34. Pelletier, K.R. A review and analysis of the health and cost-effective outcome studies of comprehensive health promotion and disease prevention programs at the worksite: 1993-95 update. *American Journal of Health Promotion* 10:380-388, 1996.

35. U.S. Department of Health and Human Services. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington DC: the Department, Public Health Service, Office of Health Promotion and Disease Prevention, 1991.

36. National Center for Health Statistics. *Employer-Sponsored Health Insurance: State and National Estimates*. Hyattsville, MD: U.S. Department of Health and Human Services, 1997.

37. Glasgow, R.E.; McCaul, K.D.; and Fisher, K.J. Participation in worksite health promotion: A critique of the literature and recommendations for future practice. *Health Education Quarterly* 20:391-408, 1993.

38. National Resource Center on Worksite Health Promotion. *Working for Good Health: Health Promotion and Small Business*. Washington, DC: Washington Business Group on Health, 1991.

39. Health Care Financing Administration (HCFA). *Managed Care in Medicare and Medicaid* [fact sheet]. Washington, DC: the Administration, 1997.

40. Halverson, P.K.; Mays, G.P.; Kaluzny, A.D.; and Richards, T.B. Not-so-strange bedfellows: Models of interactions between managed care plans and public health agencies. *The Milbank Quarterly* 75(1):113-138, 1997.

41. CDC. Prevention and managed care: Opportunities for managed care organizations, purchasers of health care, and public health agencies. *Morbidity and Mortality Weekly Report* 42(Rr-14):1-12, 1995.

42. Freudenberg, N. Health promotion in the city: A review of current practice and recommendations for new directions to improve the health of urban populations in the United States. Report to the Centers for Disease Control and Prevention, Center on AIDS, Drugs, and Community Health. New York: Hunter College, City University of New York, 1997.

43. National Heart, Lung, and Blood Institute. *Strategies for Diffusing Health Information to Minority Populations: A Profile of a 'Community-Based Diffusion Model*. Executive Summary. Washington, DC: U.S. Department of Health and Human Services, 1987.

44. National Center for Health Statistics. *Excess Deaths and Other Mortality Measures for Hispanic and Black Populations*. Washington, DC: U.S. Department of Health and Human Services, 1995.

45. World Health Organization (WHO), Division of Health Promotion, Education and Communication. *Health Promotion Glossary*. Geneva: the Organization, 1998.

46. McLeroy, K. Community Capacity: What Is It? How Do We Measure It? What Is the Role of the Prevention Centers and CDC? Presented at Sixth Annual Prevention Centers Conference, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Atlanta, GA.

47. Green, L.W., and Ottoson, J.M. *Community and Population Health*, 8th ed. New York, NY: McGraw Hill, 1999.

48. Heaney, C.A., and Goetzel, R.Z. A review of health-related outcomes of multi-component worksite health promotion programs. *American Journal of Health Promotion* 11:290-307, 1997.

49. Green, L.W., and Kreuter, M.W. *Health Promotion Planning: An Educational and Ecological Approach*, 3rd ed. Mountain View, CA: Mayfield Publishing Company, 1999.

50. Duhl, L., and Hancock, T. Assessing Healthy Cities. World Health Organization Healthy Cities papers.

51. Moriarty, D. CDC studies community quality of life. *NACCHO NEWS* 12(3):10,13, 1996.

52. Stokols, D. Establishing and maintaining healthy environments: Toward a social ecology of health promotion. *American Psychologist* 47(1):6-22, 1992.

8

Environmental Health

Co-Lead Agencies: Agency for Toxic Substances and Disease
Registry; Centers for Disease Control and
Prevention; National Institutes of Health

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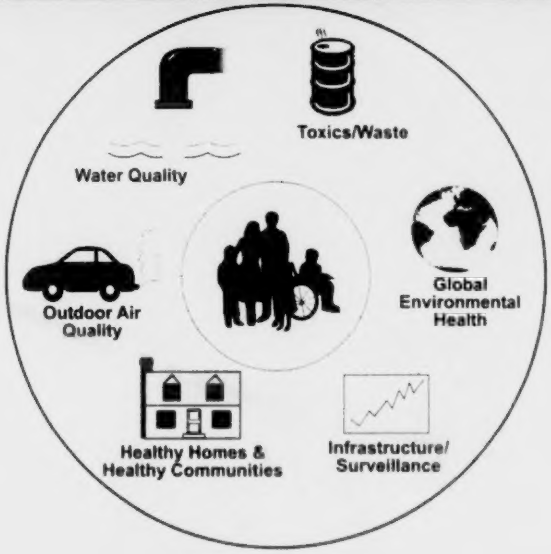
Goal

Promote health for all through a healthy environment.

Overview

According to the World Health Organization, "In its broadest sense, environmental health comprises those aspects of human health, disease, and injury that are determined or influenced by factors in the environment. This includes the study of both the direct pathological effects of various chemical, physical, and biological agents, as well as the effects on health of the broad physical and social environment, which includes housing, urban development, land-use and transportation, industry, and agriculture."[1] The term "environment" may also be used to refer to air, water, and soil. This more narrow definition ignores the man-made environment created by a society. Where and how a society chooses to grow and develop affects the quality of life by determining how long people spend traveling to work, shopping, or going to school. Where and how a society builds its houses, schools, parks, and roadways can also limit the ability of some people to move about and lead a normal life.

Healthy People 2010: Environmental Health


Water Quality
Toxics/Waste
Global Environmental Health
Outdoor Air Quality
Healthy Homes & Healthy Communities
Infrastructure/ Surveillance

Because the impact of the environment on human health is so great, protecting the environment has long been a mainstay of public health practice. National, State, and local efforts to ensure clean air and safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed a great deal to improvements in public health in the United States. Unfortunately, in spite of the billions of dollars spent to manage and clean up hazardous waste sites in the Nation each year, little money has been spent evaluating the health risks associated with chronic, low-level exposures to hazardous substances. This imbalance results in an inadequate amount of useful information to evaluate and manage these sites effectively and to evaluate the health status of people who live near the sites.[2] In the past, research in environmental epidemiology and toxicology has often been based on limited information. New knowledge about the interactions between specific genetic variations among individuals and specific environmental factors provides enormous opportunity for further developing modifications in environmental exposures that contribute to disease. Further research is needed to address these and other problems and to improve the science and management of health effects on people exposed to environmental hazards.[3]

Issues

Environmental factors play a central role in human development, health, and disease. Broadly defined, the environment, including infectious agents, is one of three primary factors that affect human health. The other two are genetic factors and personal behavior.

Human exposures to hazardous agents in the air, water, soil, and food, and to physical hazards in the environment are major contributors to illness, disability, and death worldwide. Furthermore, deterioration of environmental conditions in many parts of the world slow sustainable development. Poor environmental quality is estimated to be directly responsible for approximately 25 percent of all preventable ill health in the world, with diarrheal diseases and respiratory infections heading the list.[4] Ill health resulting from poor environmental quality varies considerably among countries. Poor environmental quality has its greatest impact on people whose health status already may be at risk.

Because the effect of the environment on human health is so great, protecting the environment has been a mainstay of public health practice since 1878.[5] National, Tribal, State, and local efforts to ensure clean air and safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed significantly to improvements in public health in the United States. However, the public's awareness of the environment's role in health is more recent. Publication of Rachel Carson's *Silent Spring* in the early 1960s, followed by the well-publicized poor health of residents of Love Canal, New York, the site of a significant toxic waste site, awakened public consciousness to environmental issues. The result of these and other similar events is the so-called "environmental movement" which has led to the introduction into everyday life of such terms as Superfund sites, water quality, clean air, ozone, urban sprawl, and agricultural runoff.

In 1993 alone, over $109 billion was spent on pollution abatement and control in the United States.[6] However, many hazardous sites still remain. Minimal research has been done to evaluate the health risks associated with chronic low-level exposures to hazardous substances, resulting in an inability to evaluate and manage such sites effectively and to evaluate the health status of residents living near such sites. Further environmental epidemiology and toxicology research is needed to address such problems and to improve the science and public health management of the health effects on people exposed to environmental hazards.

To address the broad range of human health issues affected by the environment, this chapter discusses six topics that cover environmental health: outdoor air quality, water quality, toxics and waste, healthy homes and healthy communities, infrastructure and surveillance, and global environmental health issues.

Outdoor air quality. Air pollution continues to be a widespread public health and environmental problem in the United States, causing premature death, cancer, and long-term damage to respiratory and cardiovascular systems. Air pollution also reduces visibility, damages crops and buildings, and deposits pollutants on the soil and in bodies of water where they affect the chemistry of the water and the organisms living there. Approximately 113 million people live in U.S. areas designated as nonattainment areas by EPA for one or more of the six commonly found air pollutants for which the Federal Government has established health-based standards.[7] The problem of air pollution is national—even international—in scope. Most of the U.S. population lives in expanding urban areas where air pollution crosses local and State lines and, in some cases, crosses U.S. borders with Canada and Mexico.

Although some progress toward reducing unhealthy air emissions has been made, a substantial air pollution problem remains, with millions of tons of toxic air pollutants released into the air each year.[8] The presence of unacceptable levels of ground-level ozone is the largest problem, as determined by the number of people affected and the number of areas not meeting Federal standards.

Motor vehicles account for approximately one-fourth of emissions that produce ozone and one-third of nitrogen oxide emissions. Particulate and sulfur dioxide emissions from motor vehicles represent approximately 20 percent and 4 percent, respectively. Some 76.6 percent of carbon monoxide emissions are produced each year by transportation sources (for example, motor vehicles, etc.).[9]

Unhealthy air is expensive. The estimated annual health costs of human exposure to all outdoor air pollutants from all sources range from $40 billion to $50 billion, with an associated 50,000 premature deaths.[10]

Water quality. Providing drinking water free of disease-causing agents, whether biological or chemical, is the primary goal of all water supply systems. During the first half of the 20th century the causes for most waterborne disease outbreaks were bacteria; protozoa and chemicals became the dominate causes beginning in

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the 1970s.[11] Most outbreaks involve only a few individuals.[12, 13, 14] In 1993, however, more than 403,000 people became sick during a single episode of waterborne cryptosporidiosis.[14]

One problem in evaluating the relationship between drinking water and infectious diseases is the lack of adequate technology to detect parasitic contamination and to determine whether the organisms detected are alive and infectious. The development of new molecular technologies to detect and monitor water contamination will enhance water quality monitoring and surveillance.

Contamination of water can come from both point (for example, industrial sites) and nonpoint (for example, agricultural runoff) sources. Biological and chemical contamination significantly reduce the value of surface waters (streams, lakes, and estuaries) for fishing, swimming, and other recreational activities. For example, during the summer of 1997, blooms of *Pfiesteria piscicida* were implicated as the likely cause of fish kills in North Carolina and Maryland. The development of intensive animal feeding operations has worsened the discharge of improperly or inadequately treated wastes,[15] which presents an increased health threat in waters used either for recreation or for producing fish and shellfish.

Toxics and waste. Critical information on the levels of exposure to hazardous substances in the environment and their associated health effects often is lacking. As a result, efficient health-outcome measures of progress in eliminating health hazards in the environment are unavailable. The identification of toxic substances and waste, whether hazardous, industrial, or municipal, that pose an environmental health risk represents a significant achievement in itself. Public health strategies are aimed at tracking the Nation's success in eliminating these substances or minimizing their effects.

Toxic and hazardous substances, including low-level radioactive wastes, deposited on land often are carried far from their sources by air, groundwater, and surface water runoff into streams, lakes, and rivers where they can accumulate in the sediments beneath the waters. Ultimate decisions about the cleanup and management of these sites must be made keeping public health concerns in mind.

The introduction and widespread use of pesticides in the American landscape continues in agricultural, commercial, recreational, and home settings. As a result, these often very toxic substances pose a potential threat to people using them, especially if they are handled, mixed, or applied inappropriately or excessively. Furthermore, children are at increased risk for pesticide poisoning because of their smaller size and because pesticides may be stored improperly or applied to surfaces that are more readily accessible by children.

Healthy homes and communities. The public's health, particularly its environmental health, depends on the interaction of many factors. To provide a healthy environment within the Nation's communities, the places people spend the most time—their homes, schools, and offices—must be considered. Potential risks include indoor air pollution, inadequate heating, cooling, and sanitation, structural problems, electrical and fire hazards, and lead-based paint hazards. More than 6 million housing units across the country meet the Federal Government's definition of substandard housing.[16]

Many factors—including air quality, lead-based paint on walls, trim, floors, ceilings, etc., and hazardous household substances such as cleaning products and pesticides—can affect health and safety. In 1996, the American Association of Poison Control Centers reported more than 2 million poison exposures from 67 participating poison control centers. The site of exposure was a residence in 91 percent of cases.[17]

Infrastructure and surveillance. Preventing health problems caused by environmental hazards requires: (1) having enough personnel and resources to investigate and respond to diseases and injuries potentially caused by environmental hazards; (2) monitoring the population and its environment to detect hazards, exposure of the public and individuals to hazards, and diseases potentially caused by these hazards; (3) monitoring the population and its environment to assess the effectiveness of prevention programs; (4) educating the public and select populations on the relationship between health and the environment; (5) ensuring that laws, regulations, and practices protect the public and the environment from hazardous agents; (6) providing public access to understandable and useful information on hazards and their sources, distribution, and health effects; (7) coordinating the efforts of all government agencies and nongovernmental groups responsible for environmental health; and (8) providing adequate resources to accomplish these tasks. Development of additional methods to measure environmental hazards in people will permit more careful assessments of exposures and health effects.

Global environmental health. Increased international travel and improvements in telecommunications and computer technology are making the world a smaller place. The term "global community" has real significance, as shared resources—air, water, and soil—draw people together. Actions in every country affect the environment and influence events around the world. Undoubtedly, the environment affects everyone's health. Sometimes benefits in one area inadvertently create worse conditions for people in different areas of the world. For example, in 1996, the United States exported more than $2.5 billion worth of pesticides.[18] Exported pesticides that are not registered, or pesticides that are restricted for use in the United States, are often used by developing countries. Their use not only endangers populations in those countries but also can contaminate food being exported from those countries to the United States. Sensitive populations, such as children and pregnant women, may be at risk from these environmental exposures. The United States can contribute to improving the health of people internationally, not only as part of a shared goal for humanity, but also because a healthy global population has positive social and economic benefits throughout the world.

Additionally, a number of countries have resources available to protect their populations from adverse health impacts but because of inadequate information they are unable to do so. Lead abatement technology, for example, is one area that the United States can provide information to other countries. Likewise, consultation and assistance on numerous environmental health issues from lead poisoning to disaster preparedness will help reduce illness, disability, and death in countries with these problems which leads to a healthier global community.

The Nation should expand its efforts to improve environmental conditions to enhance the health of developing countries and should also increase collaboration, coordination, and outreach efforts with the rest of the world to help close the gap between existing and attainable health status.

Trends

During the 1990s, progress in improving environmental health was mixed. The decline in childhood lead poisoning in the United States represents a public health success. In 1984, between 2 and 3 million children aged 6 months to 5 years had blood lead levels (BLLs) greater than 15 µg/dL, and almost a quarter of a million had BLLs above 25 µg/dL,[19] a level which can damage vital organs and the brain. (Blood levels are measured in micrograms of lead found in a deciliter of blood.) By the early 1990s, fewer than 900,000 children had BLLs above 10µg/dL, the current standard for identifying children at risk.[20] This dramatic reduction is the result of research to identify persons at risk, professional and public education campaigns to "spread the word," broad-based screening measures to find those at risk, and effective community efforts to clean up problem areas, namely substandard housing units. However, despite the success achieved, more remains to be done before childhood lead poisoning becomes a disease of the past. Although childhood lead poisoning occurred in all population groups, the risk was higher for persons having low income, living in older housing, and belonging to certain racial and ethic groups. For example, among non-Hispanic black children living in homes built before 1946, 22 percent had elevated BBLs. Because the risk for lead poisoning is not spread evenly throughout the population, efforts are continuing to identify children at risk and assure that they receive preventive interventions.

Unfortunately, not all trends for environmental health issues are as encouraging. Since the mid-1980s, asthma rates in the United States have risen to the level of an epidemic.[21] Asthma and other respiratory conditions often are triggered or worsened by substances found in the air, such as tobacco smoke, ozone, and other particles or chemicals. Based on existing data, an estimated 17.3 million people in the United States had asthma in 1998,[22] including more than 5 million children aged 18 years and under. Between 1980 and 1993, the overall death rate for asthma increased 52 percent, from 12.8 to 19.5 per million population; for people aged 18 years and under, the death rate increased 67 percent, from 1.8 to 3.0 per million population. The direct economic and health care costs of asthma and other respiratory conditions can be large. In 1990, the estimated total cost of asthma was

$6.2 billion; the total cost was projected to rise to $14.5 billion by the year 2000. The indirect costs of asthma, measured in reduced quality of life and lost productivity, include the estimated 10 million school days each year that children miss. Lost productivity from missed work days of parents caring for children with asthma is estimated to be $1 billion—not including the cost of lost productivity from adults with asthma who miss work.[23] (See Focus Area 24. Respiratory Diseases.)

Although successes in environmental public health are possible, they are difficult to achieve. Infectious and chemical agents still contaminate food and water. Animals continue to carry diseases to human populations, and outbreaks of once-common intestinal diseases (for example, typhoid fever) although less frequent, still occur. (See Focus Area 10. Food Safety.) These outbreaks underscore the need to maintain and improve programs developed in the first half of the 20th century to ensure the safety of food and water. The challenge is to retain these basic capacities in the 21st century, with the added responsibilities for dealing with emerging hazards. The control of well-known hazards must coexist with ongoing research and the development of strategies and methods to understand and control new hazards. Another challenge is the need to help the public understand the link between human activity and the destruction of the environment.

Within the United States, significant strides toward a reduction in harmful air emissions can be achieved by individuals choosing not to drive their cars. People need to use public transit, walk, or bicycle more often. Laws can help improve street and highway design to facilitate pedestrians and bicyclists, and employers can embrace telecommuting, but the choice remains with the individual. Encouraging individuals to walk or bike also reduces the problem of overweight people and obesity, which have risen to alarming levels in the U.S. population.

Urban sprawl has become an increasingly important concern in the United States for several reasons: increased outdoor air pollution in major urban areas, reduced quality of life due to the loss of free time and the stress of increased commuting time, and less green space in our major metropolitan areas. Between 1983 and 1995, the average annual vehicle miles traveled increased 80 percent.[24] These conditions lead to negative health conditions, such as asthma and injuries from road rage due to traffic-related stress. In addition, sprawl diminishes the amount of land available for prime recreational and agricultural uses and can bring two land uses together that do not coexist well. Examples include when new residential development in an area that was previously agricultural exposes new residents to sounds, smells, and substances, such as pesticides, which can pose a possible hazard to their health.

On a global scale, the U.S.-Mexico border area illustrates how human activity can contribute to damaging the environment, affecting generations to come. Over the past 30 years, this region has experienced a dramatic surge in population and industrialization. The region has had great difficulty in supporting this growth and suffers from a lack of resources and expertise to properly manage solid waste, handle and store pesticides and other hazardous materials, supply sufficient drinking water, and support other sustainable development efforts.[25] Nations need to make choices about how to deal with such regions; offering technical assistance is an option to speed knowledge transfer and reduce environmental harm.

Disparities

Studies have linked race and socioeconomic status to increased exposure to environmental hazards and information about gene-environment interactions improve the ability to determine who has increased risk of disease from these exposures. Table 8-A and Table 8-B summarize some inequities in the United States regarding exposure to selected potential environmental hazards.

Table 8-A. Percentage of African American, Hispanic, and white populations living in air-quality nonattainment areas, 1992.[26]

Pollutant	African American	Hispanic	White
		Percent	
Particulates	16.5	34.0	14.7
Carbon Monoxide	46.0	57.1	33.6
Ozone	62.2	71.2	52.5
Sulfur Dioxide	12.1	5.7	7.0
Lead	9.2	18.5	6.0

Table 8-B. Proportions of certain racial and ethnic and lower socioeconomic populations in census tracts surrounding waste treatment, storage, and disposal facilities (TSDF) vs. the proportion of these groups in other census tracts, 1994.[26]

Location of TSDFs	Demographic Breakdowns		
	African Americans	Hispanics	Persons Living Below the Poverty Line
		Percent	
Census tracts with either TSDFs or at least 50 percent of their area within 2.5 miles of a tract with TSDF.	24.7	10.7	19.0
Census Tracts without TSDFs	13.6	7.3	13.1

Disparities exist in the environmental exposures certain populations face and in the health status of these populations. For example, in New York City, African American, Hispanic, and low-income populations have been found to have hospitalization and death rates from asthma 3 to 5 times higher than those for all New York City residents. African American children have been found to be 3 times more likely than white children to be hospitalized for asthma and asthma-related conditions and 4 to 6 times more likely to die from asthma.[26] (See Focus Area 24. Respiratory Diseases.) With respect to BLL, children from certain racial and ethnic groups are disproportionately affected. While there are no studies to show rural/frontier dwellers are at increased risk to exposure to contaminated drinking water, the preponderace of this population depends on unregulated private wells for their drinking water. The U.S. Geological Survey (USGS) reports that 42.8 million persons in the United States (17 percent of the total population) were served by their own (self-supplied) water systems in 1990.[27]

Opportunities

An increase in public awareness of environmental health issues is key to achieving this chapter's goal and objectives. Education—at all levels—is a cornerstone of broad prevention efforts.

Improving the availability of environmental health data also will help meet the objectives. The Internet has increased dramatically access to environmental information. Databases, such as Toxnet® (at http://sis.nlm.nih.gov/sisl),[28] Internet Grateful Med® (at http://igm.nlm.nih.gov),[29] and TRI (the Toxic Release Inventory www.epa.gov/ceisweb1/ceishome/ceisdata/xplor-tri/explorer.htm), may provide useful information about environmental hazards or other environmental problems in communities to health care providers, policymakers, and the public. Moreover, better dissemination of global environmental health information may reduce the occurrence of disease or exposure to harmful environmental agents for U.S. citizens traveling abroad.

To be successful, programs to improve environmental health must be based on scientific evidence. The complex relationship between human health and the acute and long-term effects of environmental exposures must be studied so prevention measures can be developed. Surveillance systems to track exposures to toxic substances such as commonly used pesticides and heavy metals must be developed and maintained. To the extent possible, these systems should use biomonitoring data, which provide measurements of toxic substances in the human body. A mechanism is needed for tracking the export of pesticides restricted or not registered for use in the United States.

Environmental hazards are not limited by political boundaries. Through the year 2010, the scope of public and environmental health must be global if the Nation is to achieve good health for all Americans. A global scope will help develop and achieve effective ways to prevent disease worldwide as well. The United States must work with other governments, nongovernmental organizations, and international organizations to help improve human health on a global scale.

Interim Progress Toward Year 2000 Objectives

Healthy People 2000 targets have been met for objectives dealing with outbreaks of waterborne diseases, with solid wastes, and with toxic substances released through industrial processes. Substantial progress has been made in objectives involving the proportion of people who live in counties that meet EPA air standards for air pollution, the number of States that require radon disclosures with real estate transactions, and with the recycling of household hazardous waste. More moderate progress has taken place for the objectives involving radon and lead-based paint testing in homes, asthma hospitalizations, and States with laws to track environmental diseases. Mixed progress or movement away from the targets is being seen in objectives dealing with mental retardation and impaired surface waters (rivers, lakes, and estuaries). Data have been mixed or difficult to assess for the objective centered around cleanup of hazardous waste sites. The target for blood lead levels in children has not been met, though some progress has been made.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Environmental Health

Goal: Promote health for all through a healthy environment.

Number	Objective
Outdoor Air Quality	
8-1	Harmful air pollutants
8-2	Alternative modes of transportation
8-3	Cleaner alternative fuels
8-4	Airborne toxins
Water Quality	
8-5	Safe drinking water
8-6	Waterborne disease outbreaks
8-7	Water conservation
8-8	Surface water health risks
8-9	Beach closings
8-10	Fish contamination
Toxics and Waste	
8-11	Elevated blood lead levels in children
8-12	Cleanup of hazardous sites
8-13	Pesticide exposures
8-14	Toxic pollutants
8-15	Recycled municipal solid waste
Healthy Homes and Healthy Communities	
8-16	Indoor allergens
8-17	Office building air quality
8-18	Homes tested for radon
8-19	Radon resistant new home construction
8-20	School policies to protect against environmental hazards
8-21	Disaster preparedness plans and protocols
8-22	Lead-based paint testing
8-23	Substandard housing

Number	Objective
Infrastructure and Surveillance	
8-24	Exposure to pesticides
8-25	Exposure to heavy metals and other toxic chemicals
8-26	Information systems used for environmental health
8-27	Monitoring environmentally related diseases
8-28	Local agencies using surveillance data for vector control
Global Environmental Health	
8-29	Global burden of disease
8-30	Water quality in the U.S.-Mexico border region

Outdoor Air Quality

8-1. Reduce the proportion of persons exposed to air that does not meet the U.S. Environmental Protection Agency's (EPA's) health-based standards for harmful air pollutants.

Target and baseline:

Objective	Reduction in Air Pollutants	1997 Baseline	2010 Target
		Percent	
8-1a.	Ozone*	43	0
8-1b.	Particulate matter, 10 µm or less in diameter (PM_{10})*	12	0
8-1c.	Carbon monoxide	19	0
8-1d.	Nitrogen dioxide	5	0
8-1e.	Sulfur dioxide	2	0
8-1f.	Lead	<1	0
		Number	
8-1g.	Total number of people	119,803,000	0

*The targets of zero people for ozone and PM_{10} will be met in 2012 and 2018, respectively.

Target setting method: Consistent with the Clean Air Act (Public Law 101-549).

Data source: National Air Quality and Emissions Trends Report, EPA.

Note: For the purpose of this objective, EPA is counting persons living in nonattainment areas only.

Historically, EPA's air quality monitoring and National Ambient Air Quality Standards data collection have taken place in large urban centers and other areas generally considered to have the Nation's poorest air quality. As nonattainment areas become attainment areas, EPA will continue its monitoring efforts. (See Focus Area 24. Respiratory Diseases.)

8-2. Increase use of alternative modes of transportation to reduce motor vehicle emissions and improve the Nation's air quality.

Target and baseline:

Objective	Increase in Use of Alternative Modes of Transportation	1995 Baseline	2010 Target
		Percent	
8-2a.	Trips made by bicycling	0.9	1.8
8-2b.	Trips made by walking	5.4	10.8
8-2c.	Trips made by transit	1.8	3.6
8-2d.	Persons who telecommute	**Developmental**	

Target setting method: Consistent with the goal of the National Bicycling and Walking Study, U.S. Department of Transportation (DOT).

Data sources: DOT, Federal Highway Administration (FHA); Nationwide Personal Transportation Survey (NPTS), U.S. Department of Commerce, Bureau of the Census; Youth Risk Behavior Survey (YRBS), CDC, NCHS; Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCHS; National Center for Bicycling and Walking; local government databases; FHA TEA-21 implementation.

For many communities in the United States, motor vehicle emissions are the primary cause of air pollution. Increasing use of alternative modes of transportation is a comprehensive approach that each citizen can take to affect local levels of air pollution. An increase in neighborhood streets with ways to slow traffic and with more sidewalks and bike lanes, offroad pedestrian or bike routes, and bicycle and pedestrian plans and programs will aid in reaching the targets for biking, walking, and transit objectives. (See Focus Area 22. Physical Activity and Fitness.) As technology improves, telecommuting will play an increasing role in U.S. business. Many people will be able to do some or all of their work from home, thus reducing peak-period demand.

8-3. Improve the Nation's air quality by increasing the use of cleaner alternative fuels.

Target: 30 percent of U.S. motor fuel consumption.

Baseline: Cleaner alternative fuels represented 2.7 percent of U.S. motor fuel consumption in 1997.

Target setting method: 10-fold improvement.

Data source: Alternatives to Traditional Transportation Fuels, U.S. Department of Energy, Energy Information Administration.

Privately owned cars, vans, and trucks; commercial fleets, trucks, and busses; and power plants are the major users of alternative fuels. Ethanol-blended fuels have been used in small engines and other nonautomotive gasoline engines since they first came into the marketplace over 25 years ago. Today, all mainstream manufacturers of power equipment, motorcycles, snowmobiles, and outboard motors permit the use of ethanol blends in their products.

The primary force behind development of an alternative fuels infrastructure is the Department of Energy Clean Cities Program—a voluntary program and locally based government and industry partnership designed to promote the use of alternative fuels and alternative fuel vehicles; cleaner air in major U.S. cities; reduced dependence on imported oil; and stimulate local economic activity.[30]

Infrastructure building also is aided by development of alternative fuel vehicles by the major automobile manufacturers. Also, ethanol blends of up to 10 percent are approved under the warranties of all major auto manufacturers, domestic and foreign, marketing vehicles in the United States. In fact, some recommend the use of cleaner-burning fuels such as ethanol in their vehicle owner manuals because of ethanol's clean air benefits. Ethanol actually can enhance engine performance by increasing octane and raising oxygen, cleaning and preventing engine deposits, and acting as a gas-line antifreeze.[31]

More than a trillion miles have been driven on ethanol-blended gasolines, and ethanol-blended fuels represent more than 12 percent of United States motor gasoline sales. Congress established the Federal ethanol program in 1979 to stimulate rural economies and reduce the Nation's alarming dependence on imported oil through the production of a domestic, renewable energy source. The program has helped build a strong domestic energy industry. From just over 10 million gallons of production in 1979, the U.S. fuel ethanol industry has grown to more than 1.8 billion gallons of annual production capacity. Ethanol is widely marketed across the country as a high-quality octane enhancer and as an oxygenate capable of reducing air pollution and improving automobile performance.

8-4. Reduce air toxic emissions to decrease the risk of adverse health effects caused by airborne toxics.

Target: 2.0 tons.

Baseline: 8.1 million tons of air toxics were released into the air in 1993.

Target setting method: 75 percent improvement.

Data source: U.S National Toxics Inventory, EPA.

Toxic air pollutants are those pollutants known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or to cause adverse environmental effects. The degree to which a toxic air pollutant affects a person's health depends on many factors, including the quantity of pollutant the person is exposed to, the duration and frequency of exposures, the toxicity of the chemical, and the person's state of health and susceptibility. Examples of toxic air pollutants include benzene, which is found in gasoline; perchloroethylene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries. Examples of other listed air toxics include dioxin, asbestos, toluene, and metals such as cadmium, mercury, chromium, and lead compounds.

Scientists estimate that millions of tons of toxic pollutants are released into the air each year. Some air toxics are released from natural sources such as volcanic eruptions and forest fires. Most, however, originate from manmade sources, including both mobile sources (for example, cars, buses, trucks) and stationary sources (for example, factories, refineries, power plants). Emissions from stationary sources constitute almost two-thirds of all manmade air toxics emissions. (See Focus Area 24. Respiratory Diseases.)

Water Quality

8-5. Increase the proportion of persons served by community water systems who receive a supply of drinking water that meets the regulations of the Safe Drinking Water Act.

Target: 95 percent.

Baseline: 73 percent of persons served by community water systems received drinking water that met SDWA (Public Law 93-523) regulations in 1995.

Target setting method: Consistent with EPA's strategic plan.

Data sources: Potable Water Surveillance System (PWSS) and Safe Drinking Water Information System (SDWIS), EPA.

Most people in the United States obtain their drinking water from public water supply systems. The Environmental Protection Agency (EPA) has established regulations intended to ensure that community water systems supply safe drinking water to their customers. Compliance with the established regulations is one measure of the public's receipt of a safe water supply, free from disease-causing agents. In 1997, small systems (serving 25 to 3,300 people) accounted for more than 85 percent of the community water systems in the United States but served only about 10 percent of the population. These systems accounted for 91 percent of the violations of the EPA drinking water regulations.[32] According to USGS, 17 percent of the Nation's total population were served by their own water-supply systems in 1990, compared with 18 percent in 1985.[27]

8-6. Reduce waterborne disease outbreaks arising from water intended for drinking among persons served by community water systems.

Target: 2 outbreaks per year.

Baseline: 6 outbreaks per year originated from community water systems (1987-96 average).

Target setting method: 67 percent improvement.

Data source: State Reporting Systems, CDC, NCID.

CDC compiles the results of State investigations into waterborne disease outbreaks arising from water intended for drinking. Between 1987 and 1996, the States reported an average of 15.5 outbreaks per year, of which 6 outbreaks were identified as originating from community water supplies.[12, 13, 14] Limited existing data suggest that State and CDC surveillance systems for detecting waterborne disease outbreaks are able to detect most waterborne disease outbreaks.

8-7. Reduce per capita domestic water withdrawals.

Target: 90.9 gallons per day.

Baseline: 101 gallons of water per day in 1995.

Target setting method: 10 percent improvement.

Data source: U.S. Department of Interior, U.S. Geological Survey (USGS).

Historically, water management in the United States has focused on directing the country's abundant supplies of fresh water to meet the needs of users. This approach has resulted in the building of large storage reservoirs and conveyance systems, especially in the West. Increasing development costs, capital shortages, government fiscal restraint, diminishing sources of water supply, polluted water, and a growing concern for the environment have forced water managers and planners to begin to rethink traditional approaches to management and to experiment with new ones. Experts on the subject of water supply and demand agree that the West is in transition from the era of water-supply development to an era of water-demand management and conservation. As the population increases in the eastern United States, the water quantity problems already facing the West will become apparent there as well. Estimates place the amount of water withdrawn for public supply during 1990 at about 5 percent more than during 1985.[27] Public-supply domestic deliveries averaged 105 gallons per day for each person served, the same as during 1985.[27] The per capita use remained about the same for the past decade as the result of active conservation programs that include the installation of additional meters and water-conserving plumbing fixtures.[27] Information about water use is available from USGS at http://water.usgs.gov/watuse/wudo.html.[33]

8-8. (Developmental) Increase the proportion of assessed rivers, lakes, and estuaries that are safe for fishing and recreational purposes.

Potential data source: Clean Water Act (Public Law 92-500), Section 305-b Report, EPA.

EPA reported that about 40 percent of the Nation's surface waters (streams, lakes, and estuaries) are too polluted for fishing, swimming, or other uses designated for them by States and Tribes.[34] Water quality in lakes, streams, and estuaries of the United States affects both the recreational and food production use of these waters. States and Tribes have water-quality management programs that address recreational use and fish and shellfish harvesting. EPA establishes water-quality objectives for these waters and monitors progress toward these goals. Discharging inadequately treated or inappropriate quantities of human, industrial, or agriculture wastes reduces the ability of water to provide conditions that support the growth and harvesting of fish and shellfish for human consumption. Such discharging also prevents water's use as a recreational resource.

8-9. (Developmental) Reduce the number of beach closings that result from the presence of harmful bacteria.

Potential data source: EPA.

During the first half of the decade (2001-2010), EPA plans to focus on conserving and enhancing the Nation's waters and aquatic ecosystems so that 75 percent of waters will support healthy aquatic communities.[35] Part of this effort will include developing a national beach-closing survey to monitor efforts to improve the quality of water used for recreational purposes. Although small streams, private lakes, and ponds will not be addressed by the EPA beach-closing survey (available at http://www.epa.gov/ost/beaches),[36] this program will provide a method to evaluate progress toward improving water quality on U.S. swimming beaches. Information from the 1997 and 1998 EPA surveys has been expanded on by the Natural Resources Defense Council (NRDC) and published in its annual beach closing report. The latest version, providing data for 1998, entitled *Testing the Waters IX: A Guide to Water Quality at Vacation Beaches* is available from NRDC and on its web site (www.nrdc.org).[37]

8-10. (Developmental) Reduce the potential human exposure to persistent chemicals by decreasing fish contaminant levels.

Potential data sources: U.S. Department of the Interior, U.S. Fish and Wildlife Service and USGS.

The Biomonitoring of Environmental Status and Trends (BEST) program (www.best.usgs.gov) is a cooperative activity of the USGS and the U.S. Fish and

Wildlife Service. Designed to assess and monitor the effects of environmental contaminants on biological resources, the program measures 51 organochlorine persistent chemicals, organophosphate and carbamate insecticides, and 21 metals.

Toxics and Waste

8-11. Eliminate elevated blood lead levels in children.

Target: Zero children.

Baseline: 4.4 percent of children aged 1 to 5 years had blood lead levels exceeding 10 µg/dL during 1991-94.

Target setting method: Total elimination.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Proportion of Children Aged 1 to 5 Years With Blood Lead Levels Greater Than or Equal to 10 µg/dL, 1991-94	**All Houses**	**Resided in House Built:**		
		Before 1946*	**1946 to 1973***	**After 1973***
	Percent			
TOTAL	4.4	8.6	4.6	1.6
Race and ethnicity				
American Indian or Alaska Native	DSU	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU	DSU
Asian	DNC	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC	DNC
Black or African American	11.5	22.7	13.2	3.3
White	2.6	6.6	1.9	1.4
Hispanic or Latino	DSU	DSU	DSU	DSU
Mexican American	4.0	13.0	2.3	1.6
Not Hispanic or Latino	DNA	DNA	DNA	DNA
Black or African American	11.2	21.9	13.7	3.4
White	2.3	5.6	1.4	1.5
Gender				
Female	3.3	7.1	2.8	1.5
Male	5.5	9.6	6.6	1.7

Proportion of Children Aged 1 to 5 Years With Blood Lead Levels Greater Than or Equal to 10 μg/dL, 1991-94	All Houses	Resided in House Built:		
		Before 1946*	1946 to 1973*	After 1973*
	Percent			
Family income level[†]				
Low	1.9	4.1	2.0	0.4
High	1.0	0.9	2.7	0
Geographic location				
Population ≥ 1 million	5.4	11.5	5.8	0.8
Population ≤ 1 million	3.3	5.8	3.1	2.5

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for "all houses" are from a separate analysis of NHANES data; data for specific periods of time provided for information purposes.

[†] Income categories defined using poverty-income ratio (PIR) (the ratio of total family income to the poverty threshold for the year). Low equals PIR ≤ 1.300; middle equals PIR 1.301 - 3.500; high equals PIR ≥ 3.501.

Although considerable progress has been made in reducing BLLs in the Nation's children, lead poisoning remains a preventable environmental problem in the United States. Culturally and linguistically appropriate information is needed alerting persons to the dangers of lead poisonings.

8-12. Minimize the risks to human health and the environment posed by hazardous sites.

Target: 98 percent of sites on the following lists:

8-12a. National Priority List sites

8-12b. Resource Conservation and Recovery Act facilities

8-12c. Leaking underground storage facilities

8-12d. Brownfield properties

Baseline: 1,200 National Priority List sites; 2,475 Resource Conservation Recovery Act facilities; 370,000 leaking underground storage facilities; 1,500 brownfield properties in 1998.

Target setting method: Consistent with EPA's 1997 Strategic Plan.

Data source: EPA and HazDat data system, Agency for Toxic Substances and Disease Registry.

The National Priorities List (NPL) is a published list of the most hazardous waste sites in the country eligible for extensive, long-term cleanup under the Superfund program. Sites listed on the NPL often are initially discovered by local or State agencies, businesses, EPA, the Coast Guard, or the public. If a site poses a significant risk to human health, as determined by the number and toxicity of substances discovered at the site and its capacity to affect surrounding populations, then the site is placed on the NPL. The Agency for Toxic Substances and Disease Registry (ATSDR) is the Federal health agency that issues recommendations to EPA, State health and environmental agencies, and the public concerning the elimination of public health threats at these sites. This advice often also includes recommendations to the public and the health care community concerning practices to identify and prevent exposures and adverse health effects. The Resource Conservation and Recovery Act (RCRA) was enacted by Congress in 1976 to find a safe way to manage and dispose of the huge volumes of municipal and industrial waste generated nationwide. RCRA facilities are authorized and regulated by this Act. With several amendments, the Act and its subsequent regulations govern the management of nonhazardous (solid) waste, hazardous waste, and underground storage tanks (USTs). The Leaking Underground Storage Tanks Program attempts to identify and eliminate the threat to human health posed by groundwater or soil contamination from petroleum released from these tanks. The term "brownfields" denotes abandoned, idle, or underused industrial or commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

8-13. Reduce pesticide exposures that result in visits to a health care facility.

Target: 13,500 visits to a health care facility per year.

Baseline: Out of 129,592 total pesticide exposures, 27,156 required management in health care facilities in 1997.

Target setting method: 50 percent improvement.

Data source: Toxic Exposure Surveillance System (TESS), American Association of Poison Control Centers.

Pesticide exposures include those involving disinfectants, fungicides, herbicides, insecticides, moth repellants, and rodenticides, as defined by EPA. The American Association of Poison Control Centers surveillance covers approximately 93 percent of the U.S. population.

8-14. (Developmental) Reduce the amount of toxic pollutants released, disposed of, treated, or used for energy recovery.

Potential data source: Toxic Release Inventory (TRI), EPA.

Reductions in toxic pollutants released, disposed of, treated, or used for energy recovery can be measured by industry's success in reducing pollution at the source—that is, not producing pollutants at all, through manufacturing process changes, shifting to less polluting ingredients, packaging changes, and other source reduction methods. For that reason, all pollutants, those released and those treated or disposed of in some manner, should be measured.

8-15. Increase recycling of municipal solid waste.

Target: 38 percent of municipal solid waste generated.

Baseline: 27 percent of total municipal solid waste generated was recycled in 1996 (includes composting).

Target setting method: Consistent with the EPA's 1997 Strategic Plan.

Data source: Characterization of Municipal Solid Waste, EPA.

Healthy Homes and Healthy Communities

8-16. Reduce indoor allergen levels.

Target and baseline:

Objective	Allergen	1998-99 Baseline	2010 Target
		Number of Homes (in millions)	
8-16a.	Group I dust mite allergens that exceed 2µ/gram of dust in bed	36.3	29.0
8-16b.	Group I dust mite allergens that exceed 10 µ/gram of dust in the bed	18.6	14.9
8-16c.	German cockroach allergens that exceed 0.1 unit/gram of dust in the bed	4.7	3.8

Indoor allergens—such as from house dust mites, cockroaches, mold, rodents, and pets—can worsen symptoms of respiratory conditions, such as asthma and allergies. These allergies are an important public health issue because most people spend the majority of their time indoors, both at home and at work. In addition, effective methods to reduce exposure to some of these allergens exist (for example, placement of impermeable covers on mattresses and pillows reduces dust mite allergen exposures in beds). (See Focus Area 24, Respiratory Diseases.)

Target setting method: 20 percent improvement.

Data source: National Survey of Lead and Allergens in Housing, CDC, NIEHS, and U.S. Department of Housing and Urban Development.

8-17. (Developmental) Increase the number of office buildings that are managed using good indoor air quality practices.

Potential data source: Indoor Environment Division, EPA.

The air quality inside a building impacts both the comfort and health of its occupants. Pollutants are found at higher levels in indoor air as compared to outdoor air. In addition, most people spend over 90 percent of their time indoors.[38]

8-18. Increase the proportion of persons who live in homes tested for radon concentrations.

Target: 20 percent.

Baseline: 17 percent of the population lived in homes in 1998 that had been tested for radon (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Total Population, 1994*	Persons Living in Homes Tested for Radon Percent
TOTAL	11
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	12
Asian	13
Native Hawaiian and other Pacific Islander	DSU
Black or African American	10
White	11
Hispanic or Latino	7
Not Hispanic or Latino	11
Black or African American	10
White	11
Gender	
Female	11
Male	11
Family income level	
Poor	8
Near poor	6
Middle/high income	13

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

8-19. Increase the number of new homes constructed to be radon resistant.

Target: 2.1 million additional new homes.

Baseline: 1.4 million new homes as of 1997.

Target setting method: 50 percent improvement.

Data source: National Association of New Home Builders.

8-20. (Developmental) Increase the proportion of the Nation's primary and secondary schools that have official school policies ensuring the safety of students and staff from environmental hazards, such as chemicals in special classrooms, poor indoor air quality, asbestos, and exposure to pesticides.

Potential data source: School Health Policies and Programs Study (SHPPS), CDC, DASH.

8-21. (Developmental) Ensure that State health departments establish training, plans, and protocols and conduct annual multi-institutional exercises to prepare for response to natural and technological disasters.

Potential data sources: Association of State and Territorial Health Officials; Public Health Foundation.

8-22. Increase the proportion of persons living in pre-1950s housing that have tested for the presence of lead-based paint.

Target: 50 percent.

Baseline: 16 percent of persons living in 1998 in homes built before 1950 had tested for the presence of lead-based paint (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Persons Living in Homes Built Before 1950, 1993*	Persons Living in Homes Tested for Lead-Based Paint
	Percent
TOTAL	10
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	17
Asian	18
Native Hawaiian and other Pacific Islander	DSU
Black or African American	18
White	8
Hispanic or Latino	11
Not Hispanic or Latino	10
Black or African American	18
White	8
Gender	
Female	10
Male	9
Family income level	
Poor	15
Near poor	10
Middle/high income	9

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

8-23. Reduce the proportion of occupied housing units that are substandard.

Target: 3 percent.

Baseline: 6.2 percent of occupied U.S. housing units had moderate or severe physical problems in 1995.

Target setting method: 52 percent improvement.

Data source: American Housing Survey, U.S. Department of Commerce, Bureau of the Census.

Residents of substandard housing are at increased risk for fire, electrical injuries, lead poisoning, falls, rat bites, and other illnesses and injuries.

Infrastructure and Surveillance

8-24. Reduce exposure to pesticides as measured by blood and urine concentrations of metabolites.

Target and baseline:

Objective	Reduction in Pesticide Exposure as Measured by Metabolites (Pesticide)	1988–94 Baseline*	2010 Target
		Blood/Urine Concentration	
8-24a.	1-naphthol (carbaryl)	36.0 µg/g creatinine	25.2 µg/g creatinine
8-24b.	Paranitrophenol (methyl parathion and parathion)	3.8 µg/g creatinine	2.7 µg/g creatinine
8-24c.	3, 5, 6-trichloro-2-pyridinol (chlorpyrifos)	8.3 µg/g creatinine	5.8 µg/g creatinine
8-24d.	Isopropoxyphenol (propoxur)	1.6 µg/g creatinine	1.1 µg/g creatinine

*95 percent of the population had concentrations below this level.

Target setting method: 30 percent improvement.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Note: Data are from a subset of NHANES data and are not nationally representative. Therefore, a population data template is not available.

Pesticides included in the table inhibit cholinesterase, an enzyme found in the human body. These pesticides are among those commonly used in the home and garden, agriculture, and industry.[39] Metabolites (or breakdown products) of pesticides are measured in urine samples obtained from persons aged 6 years and older. Urinary measurements of pesticide metabolites are an accurate way to measure recent exposure to pesticides that inhibit cholinesterase. Concentrations of pesticide metabolites in urine are corrected for kidney function and expressed in µg/g creatinine, a measure of kidney function.

8-25. (Developmental) Reduce exposure of the population to pesticides, heavy metals, and other toxic chemicals, as measured by blood and urine concentrations of the substances or their metabolites.

Objective	Exposure Item
	Heavy metals
8-25a.	Arsenic
8-25b.	Cadmium
8-25c.	Lead
8-25d.	Manganese
8-25e.	Mercury
	Pesticides
8-25f.	2, 4-D, o-phenylphenol
8-25g.	Permethrins
8-25h.	Diazinon
	Persistent chemicals
8-25i.	Polychlorinated biphenyls
8-25j.	Dioxins
8-25k.	Furans
	Organochlorine compounds
8-25l.	Chlordane
8-25m.	Dieldrin
8-25n.	DDT
8-25o.	Lindane

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Heavy metals, PCBs, dioxins, furans, and organochlorines are in use or have been used in the past. These compounds are known or suspected to cause cancer, birth defects, or other diseases in people.

8-26. (Developmental) Improve the quality, utility, awareness, and use of existing information systems for environmental health.

Potential data sources: Toxic Release Inventory, EPA; Environmental Defense Fund.

Other environmental health information systems include Toxline®, IRIS, RTECS®, HazDat, TRI, and AIRS. They can be accessed via the Internet.

8-27. Increase or maintain the number of Territories, Tribes, and States, and the District of Columbia that monitor diseases or conditions that can be caused by exposure to environmental hazards.

Target and baseline:

Objective	Disease	1999 Baseline	2010 Target
		Number of Jurisdictions	
8-27a.	Lead poisoning	41	51
8-27b.	Pesticide poisoning	20	25
8-27c.	Mercury poisoning	14	15
8-27d.	Arsenic poisoning	10	10
8-27e.	Cadmium poisoning	10	10
8-27f.	Methemoglobinemia	9	10
8-27g.	Acute chemical poisoning*	8	15
8-27h.	Carbon monoxide poisoning	7	51
8-27i.	Asthma	6	51
8-27j.	Hyperthermia	4	10
8-27k.	Hypothermia	**Developmental**	
8-27l.	Skin cancer	**Developmental**	
8-27m.	Malignant melanoma	**Developmental**	
8-27n.	Other skin cancer	**Developmental**	
8-27o.	Birth defects	**Developmental**	

*Includes chemicals not covered elsewhere in the table.

Note: Target and baseline data are for States and the District of Columbia. The targets will be adjusted as data for Tribes and Territories become available.

Target setting method: Total coverage or expert opinion.

Data sources: Periodic surveys, Public Health Foundation and Council of State and Territorial Epidemiologists.

8-28. (Developmental) Increase the number of local health departments or agencies that use data from surveillance of environmental risk factors as part of their vector control programs.

Potential data source: Profile of local health departments, National Association of County and City Health Officials (NACCHO).

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8-29. Reduce the global burden of disease due to poor water quality, sanitation, and personal and domestic hygiene.

Target: 2,130,000 deaths worldwide attributable to these factors.

Baseline: 2,668,200 deaths worldwide attributable to these factors in 1990.

Target setting method: 20 percent improvement.

Data source: Global Burden of Disease, World Health Organization.

Improving access to clean water and sanitation has been cited as the single most effective means of alleviating human distress.[40] Better water supply and sanitation may increase the average life expectancy in developing countries by 15 years. Furthermore, poor sanitation ranks as one of the highest contributing factors to the global burden of disease and injury. Diarrheal diseases, which kill nearly 3 million persons a year in developing countries, typically result from poor sanitation practices and the consumption of substandard drinking water. These diseases are mostly preventable by improving environmental services.

8-30. Increase the proportion of the population in the U.S.-Mexico border region that have adequate drinking water and sanitation facilities.

Target and baseline:

Objective	Type of Drinking Water and Sanitation Service	1997 Baseline	2010 Target
		Percent of Population Receiving Water Service or Treatment	
	Wastewater sewer service provided		
8-30a.	Ciudad Acuna	39	49
8-30b.	Matamoros	47	57
8-30c.	Mexicali	80	90
8-30d.	Nogales, Sonora	81	91
8-30e.	Piedras Negras	80	90
8-30f.	Reynosa	57	67
	Wastewater receiving treatment		
8-30g.	Ciudad Acuna	0	10
8-30h.	Matamoros	0	10
8-30i.	Mexicali	72	82
8-30j.	Nogales, Sonora	100	100

8-30k.	Piedras Negras	0	10
8-30l.	Reynosa	100	100

Target setting method: 10 percentage point improvement.

Data sources: EPA; Mexico's Comisión Nacional de Agua; State and local health departments; American Water Works Association; Rural Water Association; U.S.-Mexican Border Health Association.

Water pollution is one of the principal environmental and public health problems facing the U.S.-Mexico border area. Deficiencies in the treatment of wastewater, the disposal of untreated sewage, and inadequate operation and maintenance of treatment plants result in health risks. Better environmental services such as sewer service, wastewater treatment service, and safe drinking water may help achieve a balance among social and economic factors and protecting the environment in border communities and natural areas.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-7. Core competencies in health provider training

1-12. Single toll-free number for poison control centers

3. Cancer

3-1. Cancer deaths

3-2. Lung cancer deaths

3-8. Melanoma cancer deaths

3.9. Sun exposure

3-10. Provider counseling about preventive measures

3-14. Statewide cancer registries

4. Chronic Kidney Disease

4-1. End-stage renal disease

6. Disability and Secondary Conditions

6-12. Environmental barriers affecting participation

7. Educational and Community-Based Programs

7-2. School health education

7-10. Community health promotion programs

10. Food Safety

10-1. Foodborne Infections

10-2. Outbreaks of foodborne infections

10-5. Consumer food safety practices

11. Health Communication

11-1. Households with Internet access

11-2. Health literacy

11-4. Quality of Internet health information sources

12. Heart Disease and Stroke

12-1. Coronary heart disease deaths

14. Immunization and Infectious Diseases

14-31. Active surveillance for vaccine safety

15. Injury and Violence Prevention

15-7. Nonfatal poisonings

15-8. Deaths from poisoning

15-10. Emergency department surveillance systems

15-11. Hospital discharge surveillance systems

15-12. Emergency department visits

15-13. Deaths from unintentional injuries

15-14. Nonfatal unintentional injuries

16. Maternal, Infant, and Child Health

16-10. Low birth weight and very low birth weight

16-11. Preterm birth

16-14. Developmental disabilities

20. Occupational Safety and Health

20-1. Work-related injury deaths

20-2. Work-related injuries

20-7. Elevated blood lead levels from work exposure

20-8. Occupational skin diseases or disorders

22. Physical Activity and Fitness

22-14. Community walking

22-15. Community bicycling

23. Public Health Infrastructure

23-1. Public health employee access to Internet

23-2. Public access to information and surveillance systems

23-3. Use of geocoding in health data systems

23-4. Data for all population groups

23-5. Data for Leading Health Indicators, Health Status Indicators, and Priority Data Needs at State, Tribal, and local level

23-6. National tracking of Healthy People 2010 objectives

23-7. Timely release of data on objectives

23-8. Competencies for public health workers

23-9. Training in essential public health services

23-10. Continuing education and training by public health agencies

23-11. Performance standards for essential public health services

23-12. Health improvement plans

23-13. Access to public health laboratory services

23-14. Access to epidemiology services

23-15. Model statutes related to essential public health services

23-16. Data on public health expenditures

23-17. Prevention research

24. Respiratory Diseases

24-1. Deaths from asthma

24-2. Hospitalizations for asthma

24-3. Hospital emergency department visits for asthma

24-4. Activity limitations

24-5. School or work days lost

24-6. Patient education

24-7. Appropriate asthma care

24-8. Surveillance system

27. Tobacco Use

27-9. Exposure to tobacco smoke at home among children

27-10. Exposure to environmental tobacco smoke

27-11. Smoke-free and tobacco-free schools

27-12. Worksite smoking policies

27-13. Smoke-free indoor air laws

28. Vision and Hearing

28-16. Hearing protection

28-17. Noise-induced hearing loss in children

28-21. Noise-induced hearing loss in adults

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Acute chemical poisoning: Unintentional poisonings caused by chemicals that are not medicines.

Aerometric Information Retrieval System (AIRS): This system, administered by EPA, contains information about air pollution in the United States and other countries.

Algae: Small one- or many-celled plants that live in the water and do not have roots, stem, or leaves but usually contain chlorophyll.

Annual vehicle miles: The distance traveled by a passenger vehicle over a given interval of time.

Bloom: Populations of algae that have grown so large that they can be seen in water with the naked eye.

Brownfields: Abandoned, idle, or underused industrial or commercial sites that raise concern in nearby communities that any expansion or redevelopment could contaminate the environment.

Chlorophyll: The green photosynthetic pigment found chiefly in plants.

Community water system: A public water system that provides water to at least 15 service connections used by year-round residents or that regularly serves at least 25 year-round residents.

Disaster: Any event, either natural (such as hurricanes, wind storms, earthquakes, volcanic eruptions, or floods) or technological (such as the release of radiation or chemical or biologic substances), that, because of its scope or severity, overwhelms a population's ability to respond.

Domestic water use: Using water for household purposes, such as drinking, preparing food, bathing, washing clothes and dishes, flushing toilets, or watering lawns and gardens. Also called residential water use. The water may be obtained from a public supply or may be self-supplied by a homeowner (such as by a well).

Environmental epidemiology: The study of the effect on human health of physical, biological, and chemical factors in the external environment. Can include examining specific populations or communities exposed to different ambient environments to clarify the relationship between physical, biological, or chemical factors and human health.

Environmental hazards: Situations or conditions in which something in the environment, such as radiation, a chemical, or other pollutant, can cause human illness or injury.

Environmental tobacco smoke: Smoke given off by cigarettes, pipes, or cigars to which nonsmokers can be exposed.

Environmental toxicology: Scientific analysis of the relationship between exposure to hazardous substances found in the environment and adverse health effects in people.

Epidemic: The occurrence in a community or region of cases of an illness, specific health-related behavior, or other health-related events clearly in excess of normal expectancy.

Evidence based: Empirical proof that accurately validates professional guidance or recommendations, or illustrates how an approach has been used successfully in the past.

Good indoor air quality practices: Operation and maintenance procedures designed to provide air quality inside a building to increase comfort and productivity and to reduce health risks for people in the building.

Greenhouse gas (GHG): A gas that absorbs radiation of specific wave lengths within the infrared spectrum of radiation released by the earth's surface and clouds so that part of the absorbed energy is trapped and the earth's surface warms up. Water vapor, carbon dioxide, nitrous oxide, methane, and ozone are the primary greenhouse gases in the earth's atmosphere.

Hazard Ranking System (HRS): The principal screening tool used by EPA to evaluate risks to public health and the environment associated with abandoned or uncontrolled hazardous waste sites. HRS calculates a score based on the potential of hazardous substances spreading from the site through the air, surface water, or ground water and on other factors, such as density and proximity of human population. This score is the primary factor in deciding whether the site should be on the National Priorities List and, if so, what ranking it should have compared to other sites on the list.

Hazardous substances: Any substance which possesses properties that can cause harm to human health and ecologic systems. A subset of these substances, toxics or toxicants are substances not produced by a living organism that can cause harm to human health and ecologic systems.

HazDat: A scientific database maintained by the Agency for Toxic Substances and Disease Registry. Provides access to information on the release of hazardous substances from Superfund sites or from emergency events and on the effects of hazardous substances on health.

Household lead dust: Very fine particles containing lead that are usually caused by the deterioration of lead paint.

Humanitarian emergencies: Emergencies that occur as a result of disasters that destroy or have a negative effect on basic human needs, such as food, shelter, and water.

Indoor air quality (IAQ): The overall state of the air inside a building as reflected by the presence of pollutants, such as dust, fungi, animal dander, volatile organic compounds, carbon monoxide, and lead.

Indoor allergens: Fine particles in indoor air that can cause allergic reactions and respiratory problems, including dust mites and animal dander.

Infectious agents: Any organism, such as a virus, parasite, or bacterium, that is capable of invading the body, multiplying, and causing disease.

Integrated Risk Information System (IRIS): This database, maintained by EPA, contains information on health hazards from over 5,000 substances.

Metabolites: Any substance produced by biological processes in the human body. In some cases, it is not possible to measure certain substances (for example, pesticides) in the human body to determine exposure to those substances, but instead it is possible to measure the secondary substance or metabolite which is created when the human body breaks down the primary substance.

National Ambient Air Quality Standards (NAAQS): Standards set by EPA for the level of common air pollutants allowed by the Clean Air Act.

National Priorities List (NPL): EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term cleanup under Superfund. The list is based primarily on the score a site receives from the Hazard Ranking System. EPA updates the NPL at least yearly. A site must be on the NPL to receive funds from the Superfund Trust Fund for remedial action.

Nonattainment area: A locality where air pollution levels persistently exceed EPA's National Ambient Air Quality Standards.

Nonpoint source: The source of runoff water coming from an area such as a yard, parking lot, pasture, or other urban or agricultural area.

Ozone: Ozone occurs naturally in the stratosphere and provides a protective layer high above the earth. At ground-level, however, ambient ozone is the prime ingredient of smog. Ambient ozone refers to ozone in the troposphere—the air that people breathe—which is different from ozone in the stratosphere, the hole in the ozone layer. Ozone is not emitted directly into the air but is formed readily in the atmosphere, usually during hot summer weather, from volatile organic compounds emitted by motor vehicles, chemical plants, refineries, factories, consumer and commercial products, other industrial sources, and trees—and from nitrogen oxides emitted by motor vehicles, power plants, and other sources of combustion. Changing weather patterns contribute to yearly differences in ozone concentrations from city to city.

Particulate matter: General term used for a mixture of solid particles and liquid droplets found in the air. These particles, which come in a wide range of sizes, originate from "built" and natural sources. Fine particles (PM2.5) result from fuel combustion from motor vehicles, power generation, and industrial facilities, as well as from residential fireplaces and wood stoves. Coarse particles (PM10) generally are emitted from other sources, such as vehicles traveling on unpaved roads, materials handling, and crushing and grinding operations, as well as windblown dust.

Per capita water use: The average amount of water used per person during a standard period, generally per day. In the United States, this measure usually is reported in gallons per day.

Persistent chemicals: Chemicals, such as organochlorine compounds, that remain in the environment for a long time and can accumulate in the fat of people and animals exposed to them.

Photosynthesis: Formation of carbohydrates from carbon dioxide and a source of hydrogen (as water) in the chlorophyll-containing tissues of plants exposed to light.

Point source: The source of water coming from a specific location, such as a drain pipe from a wastewater treatment plant or an industrial plant.

Poisoning: An exposure to a toxic substance that produces negative signs or symptoms.

Premature death: A death that occurs earlier than the life expectancy expected for most members of the population.

Protozoa: A subkingdom of the animal kingdom, including all of the so-called acellular or unicellular forms (for example, Amoeba, Giardia, and Cryptosporidium).

Radon: A colorless, naturally occurring radioactive gas found in some soils or rocks.

Radon-resistant construction: Affordable and simple techniques that, when incorporated during construction of a new home, reduce indoor radon levels by preventing radon entry and providing a means for venting radon to the outdoors.

Registry of Toxic Effects of Chemical Substances (RTECS®): Maintained by the National Institute for Occupational Safety and Health, this database contains information on the toxic effects of chemical substances. The list of substances includes drugs, food additives, preservatives, ores, pesticides, dyes, detergents, lubricants, soaps, plastics, extracts from plant and animal sources, plants or animals that are toxic by contact or consumption, and industrial intermediates and waste products from production processes.

Service connection: The point at which a customer's water supply attaches to a water utilities distribution system.

Special classrooms: Classrooms with special characteristics, such as laboratories or art rooms, in or art rooms, in which particular environ-mental hazards may be found.

Substandard housing: Housing with moderate or severe physical problems in plumbing, heating, or electrical systems, upkeep and sanitation, hallways, or kitchens.

Superfund: The program operated under the legislative authority of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA) that funds and carries out EPA solid waste emergency and long-term removal or remedial activites. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting or supervising cleanup and other remedial actions or both.

Sustainable development: Growth and development within a society that is intended to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Toxic Release Inventory (TRI): EPA's list of more that 600 designated chemicals that threaten health and the environment. Authorized under the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986, this system requires manufacturers to report releases of these chemicals to EPA and State governments. EPA compiles the data in an online, publicly accessible national computerized database.

Toxline®: A collection of online information on drugs and other chemicals maintained by the National Library of Medicine.

Transit: Represents what used to be called "mass transit." The 1990 Nationwide Personal Transportation Survey (NPTS/U.S. Department of Transportation) included the following modes in its transit count: bus, subway or elevated rail, commuter rail, streetcar, and trolley. The 1995 NPTS characterizes a "trip" as travel to a destination (for example, worksite). Travel to work, for instance, that includes two stops along the way (trip chains) would constitute three "trips."

µg/dL: Micrograms per deciliter.

Urban sprawl: Unplanned and inefficient development of open land.

Vector-borne diseases: Illnesses that are transmitted to people by organisms, such as insects.

Vector control: Control of any object, organism, or thing that transmits disease from one host to another.

Waterborne disease outbreaks: Includes only outbreaks from infectious agents and chemical poisoning incidents in which two or more people experience a similar illness after consumption or use of water intended for drinking and epidemiologic evidence implicates water as the source of illness. The stipulation that at least two people be ill is waived for single cases of laboratory-confirmed, primary amebic meningoencephalitis and for single cases of chemical poisoning if water-quality data indicate contamination by the chemical.

References

1. World Health Organization (WHO). Indicators for Policy and Decision Making in Environmental Health (draft). Geneva, Switzerland: the Organization, June 1997.

2. National Research Council. *Environmental Epidemiology: Public Health and Hazardous Wastes*, Vol. 1. Washington, DC: National Academy Press, 1991.

3. Agency for Toxic Substances and Disease Registry: Priority Health Conditions—An Integrated Strategy to Evaluate the Relationship Between Illness and Exposure to Hazardous Substances. Atlanta, GA: U.S. Department of Health and Human Services, 1993.

4. WHO Fact Sheet 170, June 1997.

5. The Commissioned Corps of the United States Public Health Service, U.S. Department of Health and Human Services Website. http://www.os.dhhs.gov/phs/corps/direct1.html#history.

6. U.S. Bureau of Economic Analysis. Survey of Current Business. May 1995.

7. National Air Quality and Trends Report, EPA, Office of Air and Radiation, Washington, DC, 1997.

8. National Toxics Inventory, EPA, 1997 Report.

9. National Air Quality and Trends Report, EPA, Washington, DC, 1997.

10. Health Costs of Air Pollution, American Lung Association, 1990.

11. Craun, G.F. In: Craun, G.F., ed. *Waterborne disease outbreaks in the United States*. Boca Raton, FL: CRC Press, 1986.

12. CDC, Waterborne disease outbreaks, 1991-1992. *Morbidity and Mortality Weekly Report* 42 (no. SS-5):1-22, 1993.

13. CDC, Waterborne disease outbreaks, 1989-1990. *Morbidity and Mortality Weekly Report* 40 (no. SS-3):1-21, 1991.

14. CDC, Waterborne disease outbreaks, 1993-1994. *Morbidity and Mortality Weekly Report* 45 (no. SS-1):1-33, 1995.

15. Minority Staff Report for Senator Tom Harkin, (D-IA) Ranking Member, United States Senate Committee on Agriculture, Nutrition, & Forestry, "ANIMAL WASTE POLLUTION IN AMERICA: AN EMERGING NATIONAL PROBLEM, Environmental Risks Of Livestock & Poultry Production," December 1997.

16. Bureau of the Census. American Housing Survey for the United States in 1995. Current Housing Reports H150/95RV. Washington, DC: U.S. Government Printing Office. 1997.

17. Litovitz, T.L.; Smilkstein, M.; Felberg, L.; et al. 1996 annual report of the American Association of Poison Control Centers: Toxic Exposure Surveillance System. *American Journal of Emergency Medicine* 15:447-500, 1997.

18. Chemical Economics Handbook [Online] (1997, September). SRF International. Available: DIALOG File 359 [1998, April 10].

19. Agency for Toxic Substances and Disease Registry. *The Nature and Extent of Childhood Lead Poisoning in Children in the United States: A Report to Congress*. Washington, DC: U.S. Department of Health and Human Services, July 1988.

20. Centers for Disease Control and Prevention (CDC). Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials. Atlanta, GA: the Agency, November 1997.

21. Last, J.M. (ed.). *A Dictionary of Epidemiology*. p.42, 1998.

22. CDC. Forecasted state-specific estimates of self-reported asthma prevalence—United States, 1998. *Morbidity and Mortality Weekly Report*, 47:1022-1025, 1998.

23. Weiss, K.B.; Gergen, P.J.; Hodgson, T.A. An economic evaluation of asthma in the United States. *New England Journal of Medicine* 326:862-866, 1992.

24. Summary of Travel Trends 1995 Nationwide Personal Transportation Survey, Oak Ridge National Library, Oak Ridge, TN, January 8, 1999, p. 13.

25. EPA. U.S.-Mexico Border XXI Program: Framework Document. No. 160-R-96-003. Washington, DC. October 1996.

26. Institute of Medicine. Toward Environmental Justice—Research, Education, and Health Policy Needs. Washington, DC: National Academy Press, 1999.

27. United States Geological Survey (1993), United States Geological Survey, Estimated use of water in the United States in 1990, USGS National Circular 1081, Washington, DC: Government Printing Office, 1993.

28. Toxnet7, National Library of Medicine, Toxicology and Environmental Health Information Program, Bethesda, MD.

29. Internet Grateful Med, National Library of Medicine, Bethesda, MD 20894, USA.

30. Department of Energy Clean Cities Program <www.ccities.doe.gov/>

31. Renewable Fuels Association <www.etanolRFA.Org>

32. Description of FY 1993BFY 1997 PWS Statistics, Safe Drinking Water Information System (SDWIS/FED), 1997 data frozen April 1, 1998, Environmental Protection Agency, Office of Enforcement and Compliance Assurance.

33. The National Water Use Program. U.S. Geological Survey. Washington, DC.

34. EPA, National Water Quality Inventory 1994 Report to Congress, 1994.

35. Environmental Protection Agency. Strategic Plan. Washington, DC: EPA, September, 1997.

36. EPA, Office of Water's Office of Science and Technology, Washington, DC.

37. NRCD Headquarters-Water Program, New York, NY.

38. Spengler, J.D., and K. Sexton. 1983. Indoor air pollution: a public health perspective. Science 221:9-17.

39. EPA. Pesticides Industry Sales and Usage; 1994 and 1995 Market estimates, 1997.

40. World Resources Institute, World Resources: A guide to the global environment. 1996-1997. Oxford: Oxford University Press.

9

Family Planning

Lead Agency: Office of Population Affairs

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Goal

Improve pregnancy planning and spacing and prevent unintended pregnancy.

Overview

In an era when technology should enable couples to have considerable control over their fertility, half of all pregnancies in the United States are unintended.[1] Although between 1987 and 1994, the proportion of pregnancies that were unintended declined in the United States from 57 to 49 percent,[2] other industrialized nations report fewer unintended pregnancies,[3] suggesting that the number of unintended pregnancies can be reduced further. Family planning remains a keystone in attaining a national goal aimed at achieving planned, wanted pregnancies and preventing unintended pregnancies. Family planning services provide opportunities for individuals to receive medical advice and assistance in controlling if and when they get pregnant and for health providers to offer health education and related medical care.

The family planning objectives for Healthy People 2010 echo the recommendations contained in the 1995 Institute of Medicine report *Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families.*[4] The foremost recommendation of the report calls for the Nation to adopt a social norm in which all pregnancies are intended—that is, clearly and consciously desired at the time of conception. Emphasizing personal choice and intent, this norm speaks to planning for pregnancy, as well as to avoiding unintended pregnancy.

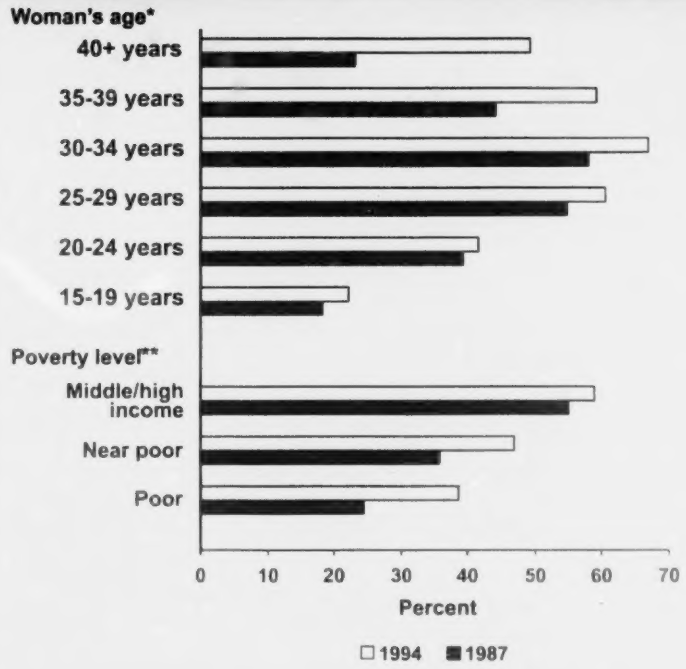
Unintended pregnancy rates in the United States show a decline, probably as a result of higher contraceptive use and use of more effective contraceptive methods.[2] Despite this improvement, unintended pregnancy remains a common problem, and further progress is needed.

Issues and Trends

One important determinant of pregnancy and birth rates is contraceptive use. The proportion of all females aged 15 to 44 years who currently are practicing contraception (including females who have been sterilized for contraceptive reasons and husbands or partners who have had vasectomies) rose from about 56 percent in 1982 to 60 percent in 1988 and 64 percent in 1995.[5] However, 5.2 percent of all females aged 15 to 44 years had intercourse in the past 3 months and did not use contraceptives.[5]

No one method of contraception is likely to be consistently and continuously suitable for each woman, man, or couple. Total abstinence is the only fool-proof method of contraception. Sterilization, the most common method of contraception

Proportion of Pregnancies That Were Intended
(By age and by poverty level, United States, 1987 and 1994)



Note: Percent intended were calculated from 100 minus percent unintended as reported in the data sources.

Sources: *Henshaw, S.K. Unintended Pregnancy in the United States. *Family Planning Perspectives* 30(1)24–29, 46; 1998. **Brown, S.S., and Eisenberg, L. *The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families.* Washington, DC: National Academy Press, 1995.

in the United States, has near-perfect effectiveness and differs from other methods because it is usually permanent.[5]

Used by an estimated 10 million females, combination oral contraceptives are the most popular method of reversible contraception in the United States. Other hormonal contraceptives, such as injectables and implants, and intrauterine devices (IUDs) have the appeal of providing effective contraception without the need for daily compliance. For barrier methods, such as the condom and diaphragm, the average effectiveness is more variable. Used correctly and consistently, condoms can prevent both pregnancy and disease. Other barrier methods include the diaphragm, cervical cap, and female condom, which may reduce the risk but do not prevent sexually transmitted diseases (STDs) that primarily affect the cervix. Spermicides used alone (foams, creams, and jellies), coitus interruptus (withdrawal), and periodic abstinence (rhythm) are other options; however, their effectiveness in actual use is lower than that for other methods.

Contraceptive method choices are far from ideal. Even with all financial and knowledge barriers removed, effective and consistent contraceptive use is difficult. Contraceptive research and development efforts must be expanded to bring new methods to the market, methods that combine high contraceptive efficacy and ease of use with protection against STDs and HIV. Increased attention also must be given to bringing new methods to the United States, including male methods of contraception, spermicide, and microbicide alternatives. Improving the range of contraceptive choices increases the likelihood that individuals and couples will be able to find a contraceptive method that suits them. Greater choice enhances individuals' control over their fertility and reduces the risk of unintended pregnancy.

Reducing unintended pregnancies is possible and necessary. Unintended pregnancy in the United States is serious and costly and occurs frequently. Socially, the costs can be measured in unintended births, reduced educational attainment and employment opportunity, greater welfare dependency, and increased potential for child abuse and neglect. Economically, health care costs are increased. An unintended pregnancy, once it occurs, is expensive no matter what the outcome. Medically, unintended pregnancies are serious in terms of the lost opportunity to prepare for an optimal pregnancy, the increased likelihood of infant and maternal illness, and the likelihood of abortion.[4] The consequences of unintended pregnancy are not confined to those occurring in teenagers or unmarried couples. In fact, unintended pregnancy can carry serious consequences at all ages and life stages.[4]

With an unintended pregnancy, the mother is less likely to seek prenatal care in the first trimester and more likely not to obtain prenatal care at all.[6, 7] She is less likely to breastfeed[8] and more likely to expose the fetus to harmful substances, such as tobacco or alcohol.[4] The child of such a pregnancy is at greater risk of low birth weight, dying in its first year, being abused, and not receiving sufficient resources for healthy development.[9] A disproportionate share of the women bearing children whose conception was unintended are unmarried or at either end of the reproductive age span—factors that, in themselves, carry increased medical and social burdens for children and their parents. Pregnancy begun without some degree of planning often prevents individual women and men from participating in preconception risk identification and management.

For teenagers, the problems associated with unintended pregnancy are compounded, and the consequences are well documented. Teenaged mothers are less likely to get or stay married, less likely to complete high school or college, and more likely to require public assistance and to live in poverty than their peers who are not mothers. Infants born to teenaged mothers, especially mothers under age 15 years, are more likely to suffer from low birth weight, neonatal death, and sudden infant death syndrome. The infants may be at greater risk of child abuse, neglect, and behavioral and educational problems at later stages.[10] Nearly 1 million teenage pregnancies occur each year in the United States.[11] Clearly, the solution to the problem needs to be found.

Unintended pregnancy is expensive, and contraceptives save health care resources by preventing unintended pregnancy.[12] The pregnancy care cost for one woman who does not intend to be pregnant, yet is sexually active and uses no contraception, is estimated at about \$3,200 annually in a managed care setting.[12, 13] Estimates of the overall cost to U.S. taxpayers for teenage childbearing range between \$7 billion and \$15 billion a year, mainly attributed to higher public assistance costs, foregone tax revenues resulting from changes in productivity of the teen parents, increased child welfare, and higher criminal justice costs.[14] Unintended births to teenagers, which account for about 40 percent of teenaged pregnancies, cost more than \$1.3 billion in direct health expenditures each year.[15]

Induced abortion is another consequence of unintended pregnancy. Although the numbers of abortions in this country have been declining over the past 15 years,[16] approximately one abortion occurs for every three live births annually in the United States, a ratio 2 to 4 times higher than in many other Western democracies. Just as unintended pregnancy occurs across the spectrum of age and socioeconomic status, women of all reproductive ages, married or unmarried, and in all income categories obtain abortions.

Abortion results when women have unintended pregnancies, and adequate access to family planning services reduces the number of unintended pregnancies. Each year, publicly subsidized family planning services prevent an estimated 1.3 million unintended pregnancies.[17] For every \$1 spent on publicly funded contraceptive services, \$3 is saved in Medicaid bills for pregnancy-related health care and medical care for newborns.[17]

Disparities

Unintended pregnancies occur among females of all socioeconomic levels and all marital status and age groups, but females under age 20 years, and poor and African American women are especially likely to become pregnant unintentionally.[4] More than 4 in 10 pregnancies to white and Hispanic females are unintended; 7 in 10 pregnancies to African American females are unintended. Unintended pregnancies during contraceptive use are most common among African American and Hispanic females. Poverty is strongly related to greater difficulty in using reversible contraceptive methods successfully, with these females also the least likely to have the resources necessary to access family planning services and the most likely to be affected negatively by an unintended pregnancy. For this reason, publicly subsidized family planning services are important. Yet, half of all females who are at risk for an unintended pregnancy and need publicly subsidized family planning services are not getting them.[18] Clearly, while these programs have contributed substantially to preventing unintended pregnancy, the need for services continues to outstrip resources available.

Difficulty in obtaining and paying for care is, of course, exacerbated for poor and low-income people. Several Federal programs support family planning services, with most targeting poor or low-income females. The Medicaid program is the largest, but reimbursement for family planning services is typically not available to adolescents, women without children, women who are married, and working poor women whose income may just exceed the eligibility level.

An estimated 6.6 million females receive services from subsidized family planning providers annually, slightly less than one-half of those considered to be in need of subsidized family planning services (those at risk of unintended pregnancy and with a family income less than 250 percent of the poverty level).[19] Family planning programs consisting of some 3,000 agencies with over 7,000 clinic locations provide nearly 40 percent of family planning services in the United States. Health departments represent nearly half of these locations, along with hospitals, community health centers, and other public and nonprofit organizations. Nearly two-thirds of all females served (4.2 million) obtained care at 1 of 4,200 clinics receiving funds from the Federal Title X Family Planning Program.[19]

Opportunities

A 1995 survey of the Nation's family planning agencies estimated that almost 70 percent of agencies have at least one special program of outreach education or service to meet the needs of teenagers. Fewer have special programs for hard-to-serve populations, such as homeless persons, persons with disabilities, or substance abusers.[20] Furthermore, whether those agencies target their services or simply provide care to those who happened to seek it is not known.[21] The need for family planning services among all these groups is undeniably great. In the case of substance abuse, the link between illegal drug use and infection with HIV has meant more Federal and State funding for programs designed to reach these groups. Thus, substance abusers may be more likely to be targeted by family planning agencies than other hard-to-reach populations. Some programs focus specifically on HIV prevention, whereas others offer comprehensive family planning services and related education and counseling.[21]

Language and cultural differences are significant barriers to serving non-English-speaking population groups. Providers report that they often have difficulty finding staff with appropriate language skills who also have adequate family planning skills and experience. Furthermore, simply speaking the language of the client is not sufficient; the provider also must be able to relate on a cultural level.[21] Persons of various ethnic backgrounds often are uncomfortable talking to strangers about intimate topics, such as sex and birth control, let alone undergoing a pelvic or breast exam. Some racial and ethnic groups tend to visit a doctor only when they are sick and not to seek preventive services, including family planning. Reaching such populations can be difficult.

Providing outreach, education, and clinical services to hard-to-reach populations is expensive. Frequently, these groups have more health problems than less disadvantaged family planning clients, and these health problems are not necessarily confined to family planning. One study estimated that the cost of providing services to homeless women is twice that of other women, with homeless women at such high risk of gynecological.problems that they must undergo a complete exam and diagnostic workup at every visit.[21] Disabled individuals often require extra staff, equipment, and time (especially if they are clients with developmental disabilities) to ensure contraceptive compliance and to deal with side-effect issues.[21] The extra time, effort, and expense required to reach hard-to-serve groups undoubtedly discourage some family planning agencies from implementing programs for these populations.[20] Clearly, there is a need to expand services to hard-to-reach populations and to find effective strategies to overcome barriers to services experienced by individuals in these populations.

Finally, public education and information about family planning need to be expanded. Public education efforts and the media could help persons to better understand the benefits of sexual abstinence. Numerous studies and polls indicate a disturbing degree of misinformation about contraceptive methods. The modest health risks of oral contraceptives frequently are exaggerated, whereas the more considerable benefits are underestimated. Knowledge about emergency contraception is not widespread, and the relative effectiveness of various contraceptive methods often is not well understood. Moreover, the risk of unintended pregnancy in the absence of contraceptive use is underestimated, and many population groups lack accurate information on STDs and reproductive health in general.[22] The media—print, broadcast, and video—must be encouraged to help in the task of conveying accurate and balanced information on contraception, highlighting the benefits as well as the risks of contraceptives.

Access to quality contraceptive services continues to be an important factor in promoting healthy pregnancies and preventing unintended pregnancies. Although people in the United States view contraception as basic to their lives, and their health care, health insurance plans traditionally have not covered family planning services. Three-fourths of U.S. women of childbearing age rely on private insurance; the extent to which they are covered for contraception can differ dramatically depending on the type of insurance.[23] Traditional plans provide the least comprehensive coverage for family planning services, while health maintenance organizations and newer managed care plans provide more comprehensive contraceptive coverage. Increased access through insurance coverage for family planning is important since in the absence of comprehensive coverage, many women may opt for whatever method may be covered by their health plan rather than the method most appropriate for their individual needs and circumstances. Other women may opt not to use contraception if it is not covered under their insurance plan.

Interim Progress Toward Year 2000 Objectives

Of the 12 family planning Healthy People 2000 objectives, progress has been made for 9 objectives. Substantial decreases have occurred in unintended pregnancy. The use of contraceptives among females aged 15 to 44 years at risk for unintended pregnancy has increased. The pregnancy rate for females using a contraceptive method has declined. Increases in adolescents' abstinence from sexual intercourse have occurred, as well as in their use of contraceptives. Although short of the year 2000 targets, decreases in adolescent pregnancy have been reported. Data are not available to update objectives on family planning counseling and age-appropriate preconception care counseling.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Healthy People 2010—Summary of Objectives

Family Planning

Goal: Improve pregnancy planning and spacing and prevent unintended pregnancy.

Number	Objective
9-1	Intended pregnancy
9-2	Birth spacing
9-3	Contraceptive use
9-4	Contraceptive failure
9-5	Emergency contraception
9-6	Male involvement
9-7	Adolescent pregnancy
9-8	Abstinence before age 15 years
9-9	Abstinence among adolescents aged 15 to 17 years
9-10	Pregnancy prevention and sexually transmitted disease (STD) protection
9-11	Pregnancy prevention education
9-12	Problems in becoming pregnant and maintaining a pregnancy
9-13	Insurance coverage for contraceptive supplies and services

9-1. Increase the proportion of pregnancies that are intended.

Target: 70 percent.

Baseline: 51 percent of all pregnancies among females aged 15 to 44 years were intended in 1995.

Target setting method: Better than the best.

Data source: National Survey of Family Growth (NSFG), CDC, NCHS.

Pregnancies Among Females Aged 15 to 44 Years, 1995	**Pregnancy Intended** Percent
TOTAL	51
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	28
White	57
Hispanic or Latino	51
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Age	
15 to 19 years	22
20 to 24 years	42
25 to 29 years	60
30 to 34 years	67
35 to 39 years	59
40 to 44 years	49
Family income level	
Poor	39
Near poor	47
Middle/high income	59

Pregnancies Among Females Aged 15 to 44 Years, 1995	**Pregnancy Intended** Percent
Select populations	
Marital status	
Currently married	69
Formerly married	38
Never married	22

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

A significant decline in the rates of unintended pregnancy has occurred, indicating that progress toward a goal of increased intended pregnancy is possible. Between 1987 and 1994, the proportion of pregnancies that were unintended declined from 57 to 49 percent.[2] By comparison, the percentage of unintended pregnancy is much lower in some other countries—in 1994-95, it was 39 percent in Canada and 6 percent in the Netherlands.[3] Overall, females in the United States spend three-fourths of their reproductive years trying to avoid pregnancy.[17] Unintended pregnancy often is mistakenly perceived as predominantly an adolescent problem; however, unintended pregnancy is a problem among all age groups. In 1994, nearly one-half (48 percent) of American females aged 15 to 44 years had at least one unintended pregnancy in their lifetime, more than one-fourth (28 percent) had one or more unplanned births, nearly one-third (30 percent) had one or more abortions, and 1 in 10 (11 percent) had both an unintended birth and an induced abortion.[2] A goal of 70 percent is ambitious and will require strategies to reduce the gaps among population groups.

9-2. Reduce the proportion of births occurring within 24 months of a previous birth.

Target: 6 percent.

Baseline: 11 percent of females aged 15 to 44 years gave birth within 24 months of a previous birth in 1995.

Target setting method: Better than the best.

Data source: National Survey of Family Growth (NSFG), CDC, NCHS.

Females Aged 15 to 44 Years, 1995	New Birth Occurred Within 24 Months of Previous Birth Percent
TOTAL	11
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA
White	DNA
Hispanic or Latino	14
Not Hispanic or Latino	DNA
Black or African American	14
White	10
Age	
15 to 19 years	9
20 to 24 years	14
25 to 29 years	10
30 to 34 years	11
35 to 39 years	10
40 to 44 years	DSU
Family income level	
Poor	19
Near poor	11
Middle/high income	7
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC
Select populations	
Marital status	
Currently married	11
Formerly married	13
Never married	11

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Encouraging females of all ages to space their pregnancies adequately can help lower their risk of adverse perinatal outcomes. To the extent that very closely spaced pregnancies are unplanned, unintended pregnancy may increase the risk of low birth weight.[4] A recent study indicates that females who wait 18 to 23 months after delivery before conceiving their next child lower their risk of adverse perinatal outcomes, including low birth weight, preterm birth, and small-for-size gestational age.[24] Health care providers can help all new mothers understand that they can become pregnant again soon after delivery and should assist them with contraceptive education and supplies.

For adolescents, bearing a child is associated with poor outcomes for young females and their children. Giving birth to a second child while still a teen further increases these risks. The prevention of second and subsequent births to very young females is of great interest to public health. Research has shown that such births are associated with physical and mental health problems for the mother and the child.[25] Yet, analysis indicates that in the 2 years following the first birth, teenaged mothers have a second birth at about the same rate as other mothers. In 1997, nearly one in every five births to teenaged mothers was a birth of second order or higher.[26]

9-3. Increase the proportion of females at risk of unintended pregnancy (and their partners) who use contraception.

Target: 100 percent.

Baseline: 93 percent of females aged 15 to 44 years at risk of unintended pregnancies used contraception in 1995.

Target setting method: Total coverage.

Data source: National Survey of Family Growth (NSFG), CDC, NCHS.

Females Aged 15 to 44 Years at Risk of Unintended Pregnancy, 1995	**Used Contraception** Percent
TOTAL	93
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	90
White	93

Females Aged 15 to 44 Years at Risk of Unintended Pregnancy, 1995	Used Contraception Percent
Hispanic or Latino	91
Not Hispanic or Latino	DNA
Black or African American	90
White	93
Age	
15 to 19 years	81
20 to 24 years	91
25 to 29 years	94
30 to 34 years	94
35 to 39 years	95
40 to 44 years	93
Family income level	
Poor	92
Near poor	91
Middle/high income	93
Select populations	
Marital status	
Currently married	95
Formerly married	92
Never married	88

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The percentage of at-risk females using any form of contraception rose from 88 in 1982 to 93 in 1995.[27] Increasing the target to 100 percent by 2010 will be challenging and could reduce dramatically occurrences of unintended pregnancy. Poor or nonexistent contraceptive use is one of the main causes of unintended pregnancy, with unintended pregnancy occurring among two groups: females using no contraception and females whose contraceptives fail or are used improperly. In the United States, the small proportion of females who are at risk of unintended pregnancy and use no method of contraception account for over half of all unintended pregnancies. Reducing the proportion of sexually active persons using no birth control method and increasing the effectiveness (correct and consistent use) with which persons use contraceptive methods would do much to lower the unintended pregnancy rate.[28] Just reducing the proportion of females not using contraception by half could prevent as many as one-third of all unintended pregnancies and 500,000 abortions per year.[29]

9-4. Reduce the proportion of females experiencing pregnancy despite use of a reversible contraceptive method.

Target: 7 percent.

Baseline: 13 percent of females aged 15 to 44 years experienced pregnancy despite use of a reversible contraceptive method in 1995.

Target setting method: Better than the best (retain year 2000 target).

Data sources: National Survey of Family Growth (NSFG), CDC, NCHS; Abortion Patient Survey, Alan Guttmacher Institute.

Females Aged 15 to 44 Years Using Reversible Contraception, 1995	**Experienced Pregnancy** Percent
TOTAL	13
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNC
White	DNC
Hispanic or Latino	16
Not Hispanic or Latino	DNA
Black or African American	20
White	11
Family income level	
Poor	DSU
Near poor	18
Middle/high income	10
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

Females Aged 15 to 44 Years Using Reversible Contraception, 1995	**Experienced Pregnancy** Percent
Select populations	
Marital/cohabiting status	
Married	10
Cohabiting	22
Unmarried, not cohabiting	14

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The public health benefits of improved contraceptive practices are potentially enormous. Whether fertile females who are sexually active and do not want to get pregnant experience an unintended pregnancy is a function of their choice—and their partners' choice—of contraceptive methods and how effectively they use them. The efficacy of reversible contraceptive methods depends on consistent and appropriate usage. Unintended pregnancies experienced by females using reversible methods are primarily a result of inconsistent and/or inappropriate use.[30] Ideally, an objective would focus on consistent and correct use of a particular method. The data, however, cannot address the role that method switching may play in unintended pregnancy.

9-5. (Developmental) Increase the proportion of health care providers who provide emergency contraception.

Potential data source: Alan Guttmacher Institute.

The *U.S. Guide to Clinical Preventive Services*[6] identifies postcoital administration of emergency contraceptive pills (ECP) after unprotected intercourse as an effective means of reducing subsequent pregnancy. ECP is estimated to reduce the risk of subsequent pregnancy by 75 percent. Yet, this method, which has the public health potential of significantly reducing unintended pregnancy, is not well known and not yet widely available to the public. Surveys indicate that knowledge and use of postcoital contraception remains low among patients and clinicians alike.[29] In 1995, less than 1 percent of females in the United States reported ever having used ECP.[31]

Several developments, however, have formalized recognition within the medical community of ECP as an effective means of preventing pregnancy, including the American College of Obstetrics and Gynecology issuance of practice guidelines for emergency oral contraception. Barriers to the more frequent use of ECP include a lack of physician awareness of the method, a lack of public awareness of the method's availability, and a lack of access by patients to a physician who will prescribe the method.[32] Increased public awareness, including culturally and linguistically competent education about ECP, as well as direct access to and insurance reimbursement for ECP, would contribute significantly toward attainment of this objective.

In February 1997, the Food and Drug Administration (FDA) announced that certain regimens of combined oral contraceptives are safe and effective for ECP when initiated within 72 hours after unprotected intercourse.[33] The FDA notice was intended to encourage manufacturers to make this additional contraceptive option available.[33] One product, an emergency contraceptive kit, has been approved by FDA and is being marketed. On July 28, 1999, FDA approved the first progestin-only emergency contraceptive.

9-6. (Developmental) Increase male involvement in pregnancy prevention and family planning efforts.

Potential data source: National Survey of Family Growth (NSFG), CDC, NCHS.

There is increasing recognition of the value of male involvement in pregnancy prevention and family planning. Several related developments in public health and welfare demonstrate that male involvement is key, including culturally and linguistically appropriate programs promoting condom use and addressing HIV and STD prevention, culturally and linguistically competent services targeting men as part of managed care marketing strategies, emphasis on male responsibility in welfare, child support enforcement, and pregnancy prevention efforts. Concern about the spread of HIV and other STDs and the recognition of condoms as the most effective way of preventing transmission during intercourse have accentuated the need to change the sexual behavior of males. The need for rapid treatment of male partners of females testing positive for bacterial STDs is a critical element in slowing not only STD spread but also that of HIV.

Yet, information about how males could and should participate in pregnancy prevention programs is lacking. For many years, reproductive policy in the United States concentrated almost entirely on females. The National Survey of Adolescent Males (NSAM), begun in 1988 by the Urban Institute and repeated again in 1995, collected the first national trend data on the reproductive behavior of male teens. An Urban Institute survey of publicly funded family planning clinics found that males make up more than 10 percent of the total clientele in only 13 percent of clinics. An average of 6 percent of clients are males. Males represent an even smaller share of clients who receive family planning services subsidized by the Title X program (2 percent in 1991) or by Medicaid (2 percent in 1990).[34] Even though males do not actually get pregnant, integrating them in prevention programs makes sense. Males must be included in any efforts to address unintended pregnancy.[35]

The next National Survey of Family Growth (NSFG) is being expanded to include males, providing an avenue for institutionalizing data collection about male fertility that will be reflected in the Healthy People 2010 objectives. Over the course of

Healthy People 2010, male measures for family planning objectives will shift from NSAM to NSFG. NSFG will be able to collect information from males about sexual activity, contraceptive use, pregnancies to which they contribute, and the outcomes of these pregnancies, as well as male perceptions of their and their partners' views on the intendedness of pregnancies and births. NSFG will cover a broader range of male age groups than had been covered under the NSAM, which included only males aged 15 to 19 years.

9-7. Reduce pregnancies among adolescent females.

Target: 46 pregnancies per 1,000.

Baseline: 72 pregnancies per 1,000 females aged 15 to 17 years in 1995.

Target setting method: Better than the best.

Data sources: Abortion Provider Survey, Alan Guttmacher Institute; National Vital Statistics System (NVSS), CDC, NCHS; National Survey of Family Growth (NSFG), CDC, NCHS.

Females Aged 15 to 17 Years, 1995	**Pregnancy** Rate per 1,000
TOTAL	72
Race and ethnicity	
American Indian or Alaska Native	DNC
Asian or Pacific Islander	DNC
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	133
White	61
Hispanic or Latino	110
Not Hispanic or Latino	62
Black or African American	137
White	47
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

Females Aged 15 to 17 Years, 1995	**Pregnancy** Rate per 1,000
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The teenage pregnancy rate in the United States is much higher than in many other developed countries—twice as high as in England and Wales, France, and Canada and nine times as high as in the Netherlands or Japan.[10] Teenage pregnancy remains an intense national issue, within the context of public health and welfare reform, concerning the optimum potential of the Nation's youth and the growth and development of newborns. Most adolescent childbearing occurs outside marriage, a trend that has increased markedly during the past two decades. In 1997, 78 percent of births to adolescent females (under age 20 years) were out of wedlock, compared to 44 percent two decades earlier (1977).[26]

Females under age 15 years experience about 30,000 pregnancies each year.[36] Consensus is widespread that all pregnancies in this age group are inappropriate and that ideally the target number should be zero. Nearly two-thirds of pregnancies in this age group end in induced abortion or fetal loss. Because of the relatively small numbers of events (and small sample sizes for fetal losses) involved, the resulting rates are not as stable as for older females. Almost no discernible decline in pregnancy rates for this age group occurs on an annual basis. Therefore, baseline and target data for pregnancies among adolescents under age 15 years are not included in this objective.[36]

9-8. Increase the proportion of adolescents who have never engaged in sexual intercourse before age 15 years.

Target and baseline:

Objective	**Increase in Adolescents Aged 15 to 19 Years Never Engaging in Sexual Intercourse Before Age 15 Years**	**1995 Baseline**	**2010 Target**
		Percent	
9-8a.	Females	81	88
9-8b.	Males	79	88

Target setting method: Better than the best.

Data sources: Females—National Survey of Family Growth (NSFG), CDC, NCHS; Males—National Survey of Adolescent Males (NSAM), Urban Institute.

Adolescents Aged 15 to 19 Years, 1995	**No Intercourse Before Age 15 Years**	
	9-8a. Females	**9-8b. Males**
	Percent	
TOTAL	81	79
Race and ethnicity		
American Indian or Alaska Native	DSU	DSU
Asian or Pacific Islander	DSU	DSU
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	70	50
White	83	84
Hispanic or Latino	76	73
Not Hispanic or Latino	81	79
Black or African American	69	51
White	83	86
Family income level		
Poor	DNA	DNC
Near poor	DNA	DNC
Middle/high income	DNA	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

9-9. Increase the proportion of adolescents who have never engaged in sexual intercourse.

Objective	**Increase in Adolescents Aged 15 to 17 Years Never Engaging in Sexual Intercourse**	**1995 Baseline**	**2010 Target**
		Percent	
9-9a.	Females	62	75
9-9b.	Males	57	75

Target setting method: Better than the best.

Data sources: Females—National Survey of Family Growth (NSFG), CDC, NCHS; Males—National Survey of Adolescent Males (NSAM), Urban Institute.

Adolescents Aged 15 to 17 Years, 1995	Never Engaged in Sexual Intercourse	
	9-9a. Females	**9-9b. Males**
	Percent	
TOTAL	62	57
Race and ethnicity		
American Indian or Alaska Native	DSU	DSU
Asian or Pacific Islander	DSU	DSU
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	51	24
White	63	64
Hispanic or Latino	49	50
Not Hispanic or Latino	64	57
Black or African American	52	24
White	65	65
Family income level		
Poor	DSU	DNC
Near poor	DSU	DNC
Middle/high income	DSU	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Sexual experience, and particularly age at first intercourse, represents a critical indicator of the risk of pregnancy and STDs. Although all forms of intercourse (vaginal, oral, and anal) involve risk of disease transmission, this chapter focuses on avoiding unintended pregnancy and not on sexual behavior per se. Therefore, the relevant objectives reference heterosexual, vaginal intercourse only. Youth who begin having sex at younger ages are exposed to these risks over a longer period of time. Research has shown that youth who have early sexual experiences are more likely at later ages to have more sexual partners and more frequent intercourse.[37] Adolescents should be encouraged to delay sexual intercourse until they are physically, cognitively, and emotionally ready for mature sexual relationships and their consequences. They should receive education about intimacy; setting limits; resistance to social, media, peer, and partner pressure; the benefits of abstinence from intercourse; and prevention of pregnancy and STDs. Since many adolescents are or will be sexually active, they should receive support and assistance in developing the skills to evaluate their readiness for mature sexual relationships. Culturally and linguistically appropriate materials are needed that can capture the attention and affect the behaviors of these youth.

9-10. Increase the proportion of sexually active, unmarried adolescents aged 15 to 17 years who use contraception that both effectively prevents pregnancy and provides barrier protection against disease.

Target and baseline:

Objective	Increase in Contraceptive Use at First Intercourse by Unmarried Adolescents Aged 15 to 17 Years	1995 Baseline	2010 Target
		Percent	
	Condom		
9-10a.	Females*	68	75
9-10b.	Males	72	83
	Condom plus hormonal method		
9-10c.	Females*	6	9
9-10d.	Males	8	11

Target setting method: Better than the best.

Data sources: Females—National Survey of Family Growth (NSFG), CDC, NCHS; Males—National Survey of Adolescent Males (NSAM), Urban Institute.

*Data currently are collected for females aged 15 to 19 years. Data for females aged 15 to 17 years will be used when available.

Sexually Active, Unmarried Adolescents Aged 15 to 17 Years, 1995	Used Condom at First Intercourse		Used Condom Plus Hormonal at First Intercourse	
	9-10a. Females (15 to 19 years)*	9-10b. Males	9-10c. Females (15 to 19 years)*	9-10d. Males
	Percent			
TOTAL	68	72	6	8
Race and ethnicity				
American Indian or Alaska Native	DSU	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU	DSU
Asian	DNC	DNC	DNC	DNC

Sexually Active, Unmarried Adolescents Aged 15 to 17 Years, 1995	Used Condom at First Intercourse		Used Condom Plus Hormonal at First Intercourse	
	9-10a. Females (15 to 19 years)*	9-10b. Males	9-10c. Females (15 to 19 years)*	9-10d. Males
	Percent			
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC	DNC
Black or African American	60	60	8	12
White	70	77	5	8
Hispanic or Latino	48	64	DSU	7
Not Hispanic or Latino	71	DNA	6	DNA
Black or African American	60	61	8	11
White	74	79	6	8
Family income level				
Poor	DSU	DNC	DSU	DNC
Near poor	DSU	DNC	DSU	DNC
Middle/high income	DSU	DNC	DSU	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data currently are collected for females aged 15 to 19 years. Data for females aged 15 to 17 years will be used when available.

Target and baseline:

Objective	Increase in Contraceptive Use at Last Intercourse by Unmarried Adolescents Aged 15 to 17 Years	1995 Baseline	2010 Target
		Percent	
	Condom		
9-10e.	Females*	38	41
9-10f.	Males	70	72
	Condom plus hormonal method		
9-10g.	Females*	8	11
9-10h.	Males	16	20

Target setting method: Better than the best.

Data sources: Females—National Survey of Family Growth (NSFG), CDC, NCHS; Males—National Survey of Adolescent Males (NSAM), Urban Institute.

*Data currently are collected for females aged 15 to 19 years. Data for females aged 15 to 17 years will be used when available.

Sexually Active, Unmarried Adolescents Aged 15 to 17 Years, 1995	**Used Condom at Last Intercourse**		**Used Condom Plus Hormonal at Last Intercourse**	
	9-10e. Females (15 to 19 years)*	**9-10f. Males**	**9-10g. Females (15 to 19 years)***	**9-10h. Males**
	Percent			
TOTAL	38	70	8	16
Race and ethnicity				
American Indian or Alaska Native	DSU	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU	DSU
Asian	DNC	DSU	DNC	DSU
Native Hawaiian and other Pacific Islander	DNC	DSU	DNC	DSU
Black or African American	39	78	8	19
White	37	67	9	15
Hispanic or Latino	22	59	DSU	10
Not Hispanic or Latino	40	DNA	10	DNA
Black or African American	39	78	8	18
White	40	69	10	16
Family income level				
Poor	DSU	DNC	DSU	DNC
Near poor	DSU	DNC	DSU	DNC
Middle/high income	DSU	DNC	DSU	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data currently are collected for females aged 15 to 19 years. Data for females aged 15 to 17 years will be used when available.

There are two major health consequences of unprotected intercourse among youth—STDs, including HIV infection, and unintended pregnancy. Although abstinence is the most effective way for adolescents to avoid STDs and pregnancy and should be stressed as the certain way to prevent STDs and pregnancy, sexually active teens must be taught to use condoms properly, effectively, and consistently. Teenaged females and males who depend upon hormonal methods of contraception must be educated about the inability of these methods to prevent STDs. (See Focus Area 13. HIV and Focus Area 25. Sexually Transmitted Diseases.) Condom use must be promoted in conjunction with other contraceptive methods.[38]

Public health messages encourage individuals whose behavior places them at risk of exposure to STDs, HIV, and unintended pregnancy to use condoms, as well as effective pregnancy prevention methods, consistently and correctly.[39] Sexual intercourse in the teen years, especially first intercourse, often is unplanned and unprotected by contraception. Condom use at last intercourse has risen substantially and significantly among both male and female teenagers, suggesting more protection from STD transmission. Condom use at first intercourse also has risen—an important indicator of how well teenagers anticipate and plan for protection at the initiation of sexual activity. Culturally and linguistically appropriate materials are needed that can capture the attention and affect the behaviors of these youth.

While condom use has risen among most teenagers, the use of oral contraceptives has dropped dramatically, suggesting greater vulnerability to unintended pregnancy if other hormonal methods or consistent use of condoms is not practiced. Among currently sexually active females, the use of oral contraceptives at last intercourse fell from 43 percent to 25 percent between 1988 and 1995. The reductions in the use of oral contraception are evident across African American, Hispanic, and white teenagers. Some of the reduction in oral contraceptive use is counteracted by the adoption of new hormonal methods of contraception, such as hormonal implants and injectables. In 1995, 7 percent of sexually active teenaged females overall used these methods at last intercourse. They were used most widely among sexually active African American teenaged females: 16 percent reported using either a hormonal implant or an injectable at last intercourse.[40]

9-11. Increase the proportion of young adults who have received formal instruction before turning age 18 years on reproductive health issues, including all of the following topics: birth control methods, safer sex to prevent HIV, prevention of sexually transmitted diseases, and abstinence.

Target: 90 percent.

Baseline: 64 percent of females aged 18 through 24 years reported having received formal instruction on all of these reproductive health issues before turning age 18 years in 1995. (Data on males will be available in the future.)

Target setting method: Better than the best.

Data source: National Survey of Family Growth, (NSFG), CDC, NCHS.

Females Aged 18 to 24 Years, 1995	Received Reproductive Health Instruction Prior to Age 18 Years		
	9-11a. Aged 18 to 24 Years	Aged 18 to 19 Years*	Aged 20 to 24 Years*
		Percent	
TOTAL	64	80	57
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	65	81	59
White	64	81	57
Hispanic or Latino	56	69	51
Not Hispanic or Latino	65	DNA	DNA
Black or African American	66	80	60
White	65	83	58
Family income level			
Poor	63	82	56
Near poor	58	76	52
Middle/high income	66	81	60

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females aged 18 to 19 years and 20 to 24 years are displayed to further characterize the issue.

All adolescents need education that teaches the interpersonal skills they will need to withstand pressure to have sex until they are ready and that includes up-to-date information about methods to prevent pregnancy and STDs. More important, they need to receive this education before they start having sex. Ideally, such education would be developmentally appropriate, include special education students, be culturally and linguistically appropriate, be medically accurate, involve parents, and be linked into a broader context of avoiding risky health behaviors and promoting improved health. Education and knowledge, however, are not enough. Adolescents need strong reinforcement from parents, schools, the media, and other sources about the importance of making conscious, informed, responsible decisions regarding whether to have intercourse; the necessity of consistent, correct condom use to protect themselves and their partners against STDs and HIV; and the use of effective contraception to prevent unintended pregnancy. (See Focus Area 13. HIV and Focus Area 25. Sexually Transmitted Diseases.)

Becoming a sexually healthy adult is a key developmental task of adolescence. Adults can encourage adolescent sexual health by providing accurate information and education about sexuality, fostering responsible decisionmaking skills, offering support and guidance in exploring and affirming personal values, and modeling healthy sexual attitudes and behaviors. Discussions between parents and their children about sexuality and their family value system related to sexual behavior are crucial. Yet, many parents of adolescents aged 10 to 15 years in families today do not talk enough about such important topics as relationships and becoming sexually active.[41]

9-12. Reduce the proportion of married couples whose ability to conceive or maintain a pregnancy is impaired.

Target: 10 percent.

Baseline: 13 percent of married couples with wives aged 15 to 44 years had impaired ability to conceive or maintain a pregnancy in 1995.

Target setting method: 23 percent improvement.

Data source: National Survey of Family Growth (NSFG), CDC, NCHS.

Married Couples With Wives Aged 15 to 44 Years, 1995	**Impaired Fecundity**
	Percent
TOTAL	13
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	14
White	13
Hispanic or Latino	13
Not Hispanic or Latino	13
Black or African American	14
White	13
Parity status	
Parity 0	25
Parity 1 or more	10

Married Couples With Wives Aged 15 to 44 Years, 1995	**Impaired Fecundity** Percent
Family income level	
Poor	15
Near poor	12
Middle/high income	13

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

A woman is classified as having impaired fecundity if it is impossible for her (or her husband or cohabiting partner) to have a baby for any reason other than a sterilizing operation, it is difficult or dangerous to carry a baby to term, or she and her partner have not used contraception and have not had a pregnancy for 3 years or longer. Impaired fecundity includes problems carrying pregnancies to term in addition to problems conceiving, whereas infertility includes only problems conceiving. By 1995, there had been a small overall decline in infertility, which was more marked in Hispanic couples.

Although infertility itself does not represent a serious public health threat, it carries significant personal, societal, and economic consequences that call for data surveillance and action. Infertility due to STDs is a preventable condition. Diagnosis and treatment of infertility are very costly, time-consuming, and invasive, and they can place immense stress on marital and family relations. Furthermore, those costs are likely to rise. The trend to delay childbearing (fecundity becomes increasingly impaired with age), the availability of fewer infants for adoption, and the development of new drugs and treatment procedures will mean that more and more couples seek expensive infertility services.

9-13. (Developmental) Increase the proportion of health insurance policies that cover contraceptive supplies and services.

Potential data source: Alan Guttmacher Institute.

In a 1995 report, the Institute of Medicine concluded that among the reasons for high rates of unintended pregnancy in the United States was lack of contraceptive coverage by private health insurance.[4] The report noted that many privately insured females who need contraceptive care must go out of plan and pay for it themselves, use over-the-counter methods that may be less effective, or not use any method at all. It recommended increasing the proportion of health insurance policies that cover contraceptive services and supplies.

The issue of private insurance coverage for reversible contraceptive methods affects most women and their families. Both newer managed care insurance plans and traditional fee-for-service insurance plans are more likely to pay for general gynecological services than they are to cover contraceptive services or supplies.[42] Many insurance plans do not cover reversible contraceptive methods. A 1993 survey conducted by the Alan Guttmacher Institute found that half of indemnity plans and 7 percent of health maintenance organizations (HMOs) do not cover nonpermanent contraception. The survey also found that plans that do cover contraceptive services and/or supplies are often inconsistent in which methods they cover and have a pronounced bias toward covering permanent surgical methods.[43]

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-2. Health insurance coverage for clinical preventive services

1-3. Counseling about health behaviors

1-7. Core competencies in health provider training

3. Cancer

3-3. Breast cancer deaths

3-4. Cervical cancer deaths

3-10. Provider counseling about preventive measures

3-11. Pap tests

3-13. Mammograms

7. Educational and Community-Based Programs

7-2. School health education

7-3. Health-risk behavior information for college and university students

7-9. Health care organization sponsorship of community health promotion activities

7-11. Culturally appropriate community health promotion programs

11. Health Communication

11-3. Research and evaluation of communication programs

11-6. Satisfaction with providers' communication skills

13. HIV

13-1. New AIDS cases

13-5. New HIV cases

13-6. Condom use

13-7. Knowledge of serostatus

13-9. HIV/AIDS, STD, and TB education in State prisons

13-10. HIV counseling and testing in State prisons

13-12. Screening for STDs and immunization for hepatitis B

13-14. HIV-infection deaths

13-15. Interval between HIV infection and AIDS diagnosis

13-17. Perinatally acquired HIV infection

14. Immunization and Infectious Diseases

14-3. Hepatitis B in adults and high-risk groups
14-9. Hepatitis C
14-28. Hepatitis B vaccination among high-risk groups

15. Injury and Violence Prevention

15-34. Physical assault by intimate partners
15-35. Rape or attempted rape
15-36. Sexual assault other than rape

16. Maternal, Infant, and Child Health

16-3. Adolescent and young adult deaths
16-4. Maternal deaths
16-5. Maternal illness and complications due to pregnancy
16-6. Prenatal care
16-15. Prenatal substance exposure
16-18. Optimum folic acid

19. Nutrition and Overweight

19-12. Iron deficiency in young children and in females of childbearing age
19-13. Anemia in low-income pregnant females
19-14. Iron deficiency in pregnant females

25. Sexually Transmitted Diseases

25-1. Chlamydia
25-2. Gonorrhea
25-3. Primary and secondary syphilis
25-4. Genital herpes
25-5. Human papillomavirus infection
25-6. Pelvic inflammatory disease (PID)
25-7. Fertility problems
25-8. Heterosexually transmitted HIV infection in women
25-9. Congenital syphilis
25-10. Neonatal STDs
25-11. Responsible adolescent sexual behavior
25-12. Responsible sexual behavior messages on television
25-13. Hepatitis B vaccine services in STD clinics
25-14. Screening in youth detention facilities and jails
25-15. Contracts to treat nonplan partners of STD patients
25-16. Annual screening for genital chlamydia
25-17. Screening of pregnant women
25-18. Compliance with recognized STD treatment standards
25-19. Provider referral services for sex partners

26. Substance Abuse

26-19. Treatment in correctional institutions

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Contraception (birth control): The means of pregnancy prevention. Methods include permanent methods (vasectomy for men and tubal ligation for women) and temporary methods (for example, hormonal implant, injectable, birth control pill, emergency contraceptive pills, intrauterine device, diaphragm, female condom, male condom, spermicidal foam/cream/jelly, sponge, cervical cap, abstinence, natural family planning, calendar rhythm, and withdrawal).

Emergency contraceptive pills (ECPs): The use of prescribed doses of birth control pills to prevent pregnancy following unprotected vaginal intercourse. The pills must be taken within 72 hours of having unprotected sex.

Family planning: The process of establishing the preferred number and spacing of one's children, selecting the means to achieve the goals, and effectively using that means.

Federal Title X Family Planning Program: A program created in 1970 as Title X at the Public Health Service Act. The program provides grants for the provision of family planning information and services.

Impaired fecundity: A broad term used to describe problems with pregnancy loss as well as problems conceiving a pregnancy.

Infertility: Failure to conceive a pregnancy after 12 months of unprotected intercourse.

Intended pregnancy: A pregnancy that a woman states was wanted at the time of conception.

Parity: The number of live births a woman has had.

Unintended pregnancy: A general term that includes pregnancies a woman reports as either mistimed or unwanted at the time of conception. If an unintended pregnancy occurs and is carried to term, the birth may be a wanted one, but the pregnancy would be classified as unintended.

Mistimed conception: Those that were wanted by the woman at some time in the future but occurred sooner than they were wanted. For example, a woman became pregnant at age 18 years but actually wanted to have her first child at age 21 years.

Unwanted conception: Those that occurred when the woman did not want any pregnancy then or in the future. For example, a woman wanted only two children but became pregnant with her third.

References

1. National Center for Health Statistics. *Healthy People 2000 Review*. Hyattsville, MD: Public Health Service, 1997.

2. Henshaw, S.K. Unintended Pregnancy in the United States. *Family Planning Perspectives* 30(1):24-29, 46, 1998.

3. Delbanco, S.; Lundy, J.; Hoff, T.; Parke, M.; and Smith, M.D. Public Knowledge and Perceptions about Unplanned Pregnancy and Contraception in Three Countries. *Family Planning Perspectives* 29(2):70-75, April 1997.

4. Brown, S.S., and Eisenberg, L., eds. *The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families*. Washington, DC: National Academy Press, 1995.

5. Piccinino, L.J., and Mosher, W.D. Trends in Contraceptive Use in the United States: 1982-1995. *Family Planning Perspectives* 30(1):4-10, 46, 1998.

6. Kost, K.; Landry, D.; and Darroch, J. Predicting Maternal Behaviors During Pregnancy: Does Intention Status Matter? *Family Planning Perspectives* 30(2):79-88, March/April 1998.

7. Piccinino, L.J. Unintended Pregnancy and Childbearing. Reproductive Health of Women. In: L.S.

Wilcox, and J.S. Marks, (eds.). *From Data to Action: CDC's Public Health Surveillance for Women, Infants and Children.* Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, 1994.

8. Dye, T.D.; Wojtowycz, M.A.; Aubry, R.H.; Quade, J.; and Kilburn, H. Unintended Pregnancy and Breast-Feeding Behavior. *American Journal of Public Health* 87(10):1709-1711, 1997.

9. Kost, K.; Landry, D.; and Darroch, J. The Effects of Pregnancy Planning Status on Birth Outcomes and Infant Care. *Family Planning Perspectives* 30(5):223-230, September/October 1998.

10. The Alan Guttmacher Institute. Sex and America's Teenagers. New York, NY: The Institute, 1994.

11. Henshaw, S.K. U.S. Teenage Pregnancy Statistics. New York: The Alan Guttmacher Institute, 1998.

12. Trussell, J.; Levengue, J.; Koenig, J.; London, R.; Borden, S.; Henneberry, J.; LaGuardia, K.; Stewart, F.; Wilson, G.; Wysocki, S.; and Strauss, M. The Economic Value of Contraception: A Comparison of 15 Methods. *American Journal of Public Health* 85(4):494-503, April 1995.

13. Lee, L.R., and Stewart, F.H. Editorial: Failing to Prevent Unintended Pregnancy is Costly. *American Journal of Public Health* 85(4):479-480, April 1995.

14. Maynard, R.A., ed. Kids Have Kids: The Economic and Social Consequences of Teen Pregnancy. *The Costs of Adolescent Childbearing* 10:285-323, 1997.

15. Trussell, J.; Koenig, J.; Stewart, F.; and Darroch, J.E. Medical Care Cost Savings from Adolescents Contraceptive Use. *Family Planning Perspectives* 29(6):248-255, 295, November/December 1997.

16. U.S. Department of Health and Human Services. *Guide to Clinical Preventive Services*, 2nd ed. Washington, DC: the Department, 1995.

17. Forrest, J.D. and Samara, R. Impact of Publicly Funded Contraceptive Services on Unintended Pregnancies and Implications for Medicaid Expenditures. *Family Planning Perspectives* 28(5):188-195, September/October 1996.

18. The Alan Guttmacher Institute. *Contraceptive Needs and Services, 1995.* New York, NY: The Institute, 1997, page 7 (table A).

19. Frost, J. Family Planning Clinic Services in the United States, 1994. *Family Planning Perspectives* 28(3):92-100, May/June 1996.

20. Frost, J., and Bolzan, M. The Provision of Public-Sector Services by Family Planning Agencies in 1995. *Family Planning Perspectives* 29(1):6-14, January/February 1997.

21. Donovan, P. Taking Family Planning Services to Hard-to-Reach Populations. *Family Planning Perspectives* 28(3):120-126, June 1996.

22. Mauldon, J., and Delbanco, S. Public Perceptions About Unplanned Pregnancy. *Family Planning Perspectives* 29(1):25-29, 40, January/February 1997.

23. The Guttmacher Report on Public Policy. The need for and cost of mandating private insurance coverage of contraception. Vol. 1, No. 4. New York, NY: The Alan Guttmacher Institute, August 1998.

24. Zhu, B.; Rolfs, R.; Nangle, B.; and Horan, J. Effect of the Interval Between Pregnancies on Perinatal Outcomes. *New England Journal of Medicine* 340(8):589-594, February 25, 1999.

25. Klerman, L. "Can Intervention Programs Prevent Subsequent Births to Teenage Mothers? Reactions to Reviews of Recent Research." Prepared for Program on Preventing Second Births to Teenage Mothers: Demonstration Findings. Sponsored by the American Enterprise Institute for Public Policy Research. March 6, 1998.

26. Ventura, S.J.; Martin, J.A.; Curtin, S.C.; and Mathews, T.J. Births: Final Data for 1997. *National Vital Statistics Reports*, 47(18), April 19, 1999.

27. National Center for Health Statistics. Healthy People 2000 Review, 1998-99. Hyattsville, MD: Public Health Service, 1999.

28. Westoff, C.D. Contraceptive Paths Toward the Reduction of Unintended Pregnancy and Abortion. *Family Planning Perspectives* 20(1):4-13, 1988.

29. Yuzpe, A.A.; Thurlow, H.J.; Ramzy, I.; and Leyshon, J.I. Post Coital Contraception—A Pilot Study. *Journal of Reproductive Medicine*, 13:53-58, 1974.

30. Haishan, F.; Darroch, J.E.; Hass, T.; and Ranjit, N. Contraceptive Failure Rates: New Estimates from the 1995 National Survey of Family Growth. *Family Planning Perspectives*, 31(2):56-63, March/April 1999.

31. Unpublished tabulation from the 1995 National Survey of Family Growth.

32. American College of Obstetricians and Gynecologists. Practice Patterns. Evidence-Based Guidelines

for Clinical Issues in Obstetrics and Gynecology. Number 3, December 1996.

33. 62 Federal Register 8610. Prescription Drug Products; Certain Combined Oral Contraceptives for Use in Postcoital Emergency Contraception. February 25, 1997.

34. Schulte, M.M., and Sonenstein, F.L. Special Report. Men at Family Planning Clinics: The New Patients? *Family Planning Perspectives* 27(5):212-216, 225, September/October 1995.

35. Sonenstein, F.L.; Stewart, K.; Lindberg, L.D.; Pernas, M.; and Williams, S. Involving Males in Preventing Teen Pregnancy: A Guide for Program Planners. The Urban Institute. December 1997.

36. Ventura, S.J.; Mosher, W.D.; Curtin, S.C.; Abma, J.C.; and Henshaw, S.K. Trends in Pregnancies and Pregnancy Rates by Outcome: Estimates for the United States, 1976-96. *National Vital Statistic Reports* 47(29) Hyattsville, Maryland: National Center for Health Statistics, 1999.

37. Office of the Assistant Secretary for Planning and Evaluation. Trends in the Well-Being of America's Children and Youth: 1998. Washington, DC: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, 1996, 324.

38. American College of Obstetricians and Gynecologists, Committee on Adolescent Health Care Condom Availability for Adolescents, Opinion Number 154, April 1995. Internal Journal of Gynecology & Obstetrics 49(3):347-351, June 1995.

39. Santelli, J.; Warren, C.; Lowry, R.; Sogolow, E.; Collins, J.; Kann, L.; Kaufman, R.; and Celentano, D. The Use of Condoms with Other Contraceptive Methods Among Young Men and Women. *Family Planning Perspectives* 29(6):261-267, November/December 1997.

40. Abma, J., and Sonenstein, F. "Teenage Sexual Behavior and Contraceptive Use: An Update." Paper presented at the American Enterprise Institute Sexuality and American Social Policy Seminar Series, April 28, 1998.

41. Kaiser Family Foundation and Children Now National Survey. Talking with Kids about Tough Issues. March 1, 1999 News Release.

42. Landry, D.J., and Forrest, J.D. Private Physicians' Provision of Contraceptive Services. *Family Planning Perspectives* 28(5):2[illegible]3-209, September/October [illegible]996.

43. The Alan Guttmacher Institute. Uneven & Unequal: Insurance Coverage and Reproductive Health Services. New York: The Institute, July 1994.

10

Food Safety

Co-Lead Agencies: Food and Drug Administration; Food Safety
and Inspection Service, U.S. Department of
Agriculture

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Goal

Reduce foodborne illnesses.

Overview

Foodborne illness imposes a burden on public health. It contributes significantly to the cost of health care.

Between 1988-92, outbreaks of foodborne illness caused an annual average of more than 15,000 cases of illness in the United States, as reported to the Centers for Disease Control and Prevention (CDC).[1] The actual illness rate may be higher because a count is taken only when the microorganism that caused the illness is identified by a laboratory and reported by a physician.

When unreported cases are taken into account, an estimated 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths each year may be associated with microorganisms in food.[2] Hospitalizations due to foodborne illnesses are estimated to cost over $3 billion each year.[3] The cost of lost productivity is estimated at between $20 billion and $40 billion each year.[3] In addition to acute illness, some microorganisms can cause delayed or chronic illness. Foodborne chemical contaminants may cause chronic rather than acute problems and specific estimates of their impact on health and the economy are not available.

Since 1996, selected State and local health departments, CDC, the Food and Drug Administration (FDA), and the Food Safety and Inspection Service (FSIS) have been cooperating in FoodNet to produce better national estimates of foodborne disease. The focus is on organisms that cause the highest number of foodborne illnesses and on new or emerging foodborne pathogens. Active surveillance, based on laboratory data, is being conducted at FoodNet sites.

The success of improvements in food production, processing, preparation, and storage practices can be measured through the reduction in "outbreaks" of disease caused by foodborne pathogens. An outbreak occurs when two or more cases of a similar illness result from eating the same food.[1] Smaller outbreaks, those with fewer cases, may be a direct result of improved food preparation practices and better epidemiological followup once cases are identified.

Issues and Trends

Underlying forces may make foodborne illnesses more of a problem in the years to come. These include emerging pathogens; improper food preparation, storage, and distribution practices; insufficient training of retail employees; an increasingly global food supply, and an increase in the number of people at risk because of aging and compromised capacity to fight these diseases.[4]

Emerging pathogens. Microorganisms continue to adapt and evolve, sometimes increasing in their ability to make an individual sick. Microorganisms previously not recognized as human pathogens or pathogens unexpectedly found in particular foods have caused outbreaks of illness. Examples are *Listeria monocytogenes*, *Escherichia coli* O157:H7, and *Cyclospora cayetanensis*. Known pathogens also may become resistant to drugs. For example, some strains of *Salmonella* species now are resistant to multiple important antimicrobial drugs.

The general trend toward increased resistance by microorganisms to multiple antimicrobial agents heightens public health concerns about treatment options and health care costs associated with foodborne illness. Of particular concern is the potential for transmission of antimicrobial-resistant pathogens to humans through the food supply. For these reasons, increased testing is planned to identify and monitor changes in patterns and trends of antimicrobial resistance in both human and animal populations.

Food preparation and storage practices. Most meals (71 percent) and snacks (78 percent) are prepared at home.[5] For these meals, the food-preparing consumer needs to protect against foodborne illness. Surveys show that consumers should improve the way they prepare, thaw, and store food.[6, 7]

Training of retail employees. The retail food industry has a large employee population with high rates of turnover. Language and literacy barriers and nonuniform systems for training and certifying workers pose additional challenges. Improper holding temperatures, inadequate cooking, poor personal hygiene, contaminated equipment, and foods from unsafe sources have been associated with foodborne outbreaks in retail food establishments. Retail food employees' use of safe food preparation and storage practices, along with use of recommended practices spelled out in the U.S. Public Health Service's *Food Code*, should reduce outbreaks.

Global food supply. An increasing amount of the food eaten in most countries originates in other countries. Diverse methods of and standards for growing and processing agricultural products and different frequencies and types of gastrointestinal infections in food workers in different regions increase the possibility of food contamination and the range of pathogens expected.

Protecting the safety of the Nation's food supply involves safeguarding against both biological and chemical contaminants in food. Chemical contaminants in food can include pesticides, toxic elements, naturally occurring toxins (for example, mycotoxins and phytotoxins), antibiotic residues in animal products, endocrine disruptor compounds, and other trace substances in food. Many questions remain unanswered about the chronic effects of exposure to these types of substances. (See Focus Area 8. Environmental Health.)

The U.S. Environmental Protection Agency (EPA) has set safety standards (tolerances) to limit the amount of pesticide residues that legally may remain in or on food or animal feed sold in the United States. Consumers and others have been concerned about the potential risk to children from pesticides. The Food Quality Protection Act of 1996 requires EPA to reassess all existing standards for pesticides by the year 2006. Under this act, EPA considers the risk from dietary exposures from all food uses of pesticides and drinking water; nonoccupational exposure, such as the use of the pesticides for lawn care; and any special sensitivities for children. FDA monitors domestic and imported foods to ensure compliance with these pesticide safety standards.[8] Under the Pesticide Data Program, the Agricultural Marketing Service of the U.S. Department of Agriculture measures how much of certain pesticides remains in or on food.[9]

Naturally occurring toxins present a different issue. Mycotoxins cannot be avoided entirely or eliminated from human foods or animal feeds because the molds that create them occur naturally in grains and other food commodities. Risk reduction strategies, such as adherence to specific good manufacturing practices (GMPs), have been developed for aflatoxins. For other mycotoxins, FDA is using a science-based risk assessment procedure to help identify appropriate risk reduction measures.

Because representative national data systems may not be available in the first half of the decade for tracking progress on mycotoxins in foods, this subject is not covered in this focus area's objectives. Research on risk reduction and efforts to collect representative national data on mycotoxins in foods will be addressed in the coming decade.

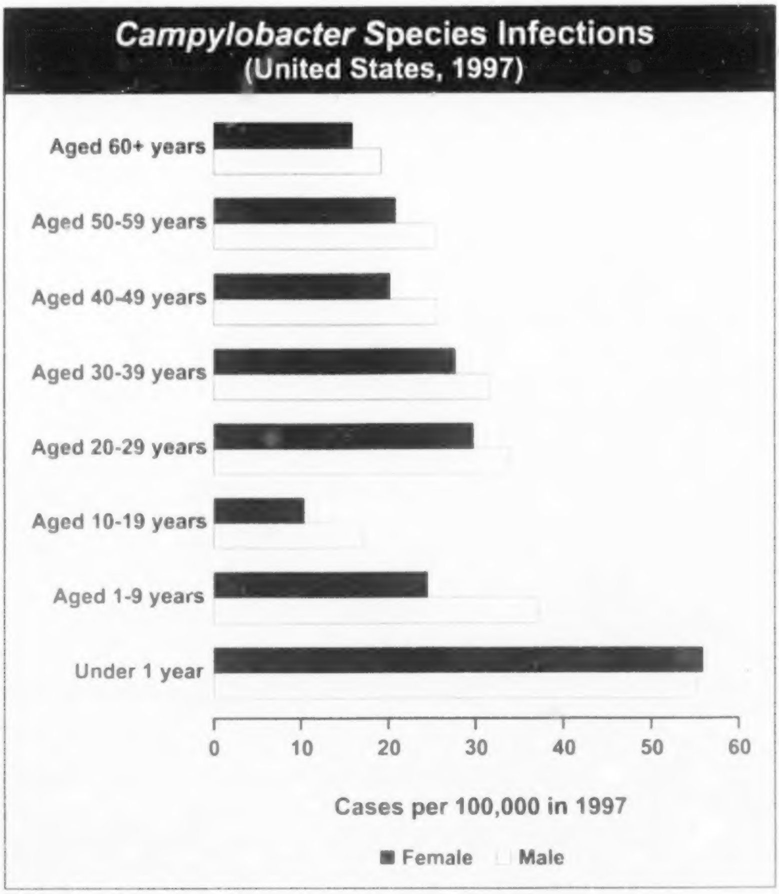
Allergen risk. Although most foodborne illness results from a microbial or chemical contaminant in food, a food itself also can cause severe adverse reactions. In the United States food allergy is an important problem: 2 to 4 percent of children under the age of 6 years[10, 11] and 1 to 2 percent of adults are allergic to specific foods.[12] The foods most likely to cause allergic reactions are milk and milk products, eggs and egg products, peanuts and peanut products, tree nuts and tree nut products, soybeans and soybean products, fish and fish products, shellfish and shellfish products, cereals containing gluten, and seeds. Allergic reactions to natural rubber latex from food handlers' gloves also occur.[13, 14]

Based on a 3-year study of anaphylaxis cases treated at an emergency department, an estimated 2,500 individuals per year in the United States experience food-induced anaphylaxis.[15, 16] Food allergy is the most frequent cause of anaphylaxis occurring outside of the hospital and the most common cause for emergency department visits for anaphylaxis.[17] Because potentially allergenic foods are present as ingredients in a variety of food products, and because even trace amounts of these allergenic foods can induce anaphylaxis, research, education, and clear food ingredient labeling information are critical for managing food allergies.

The Food, Drug, and Cosmetic Act requires manufacturers to list all ingredients of a packaged food, with two exemptions. Spices, flavorings, and colorings may be declared collectively without each one named.[18] Incidental additives, such as processing aids present in a food at insignificant levels and not having a technical or functional effect in the finished food, do not have to be listed individually.[19] However, the presence of a substance that may cause an adverse reaction is considered significant and so it must be listed on the food label. FDA has advised manufacturers that, because adhering to GMPs is essential for effective reduction of adverse reactions, precautionary labeling, such as "may contain (insert name of allergenic ingredient)," should not be used in lieu of adherence to GMPs.[20]

Disparities

More than 30 million people in the United States are likely to be particularly susceptible to foodborne disease.[21] Very young, elderly, and immunocompromised persons experience the most serious foodborne illnesses. They may become ill from smaller doses of organisms and may be more likely to die of foodborne



Source: CDC, NCHS. *Healthy People 2000 Review, 1998–99.*

disease than other persons. For example, children under age 1 have the highest rate of *Campylobacter* species infections (see figure). Other high-risk populations include residents in nursing homes or chronic care facilities; hospitalized, cancer, and organ transplant patients; and individuals with AIDS, with cirrhosis, on antimicrobial treatment, or with reduced stomach acid such as due to anti-acid medications. In cases of listeriosis and toxoplasmosis, pregnant women and their fetuses or newborns are at higher risk than other groups.

Representative data on specific U.S. populations, such as racial and ethnic groups or socioeconomic groups, are not available from FoodNet. Efforts are underway to improve reporting of this information. A report from the United Kingdom indicates a relationship between socioeconomic status and foodborne illness that may apply to the United States. It found that hospital admissions for gastrointestinal infections increased with increasing socioeconomic deprivation.[22]

Opportunities

The opportunities to reduce the burden of foodborne illness involve risk reduction and control interventions targeted at various steps from production to consumption. These strategies include Hazard Analysis and Critical Control Points programs (required starting in 1997 for seafood and in 1998 for meat and poultry processing); improved adherence to GMPs; education of food processors, preparers, and servers at all levels in the food industry and in the home; and improved investigation of outbreaks and sporadic cases of foodborne illness.

The Partnership for Food Safety Education was formed in 1997 as a part of the National Food Safety Initiative. The Partnership—composed of industry, State, and consumer organizations and government liaisons from FDA, FSIS, Cooperative State Research, Education, and Extension Service (CSREES), CDC, and EPA—cooperatively developed the FightBAC!™ Campaign with messages to reach all consumers. The messages are based on four key food safety practices:

- Clean: Wash hands and surfaces often.
- Separate: Don't cross-contaminate.
- Cook: Cook to proper temperatures.
- Chill: Refrigerate promptly.

Increased surveillance, planned as a result of the 1997 initiative and improvements to the FoodNet program, will inform the public health community, veterinary and producer groups, and regulatory agencies of the extent of the problem of human pathogens that come from the intestines of animals. These organisms might resist drug therapy when human illness occurs. Public health experts anticipate an initial increase in the number of resistant pathogens detected due to improved surveillance. Over time, as control and educational programs are enacted, decreases should follow. Wider and more representative testing will give a better picture of the nature and extent to which antimicrobial-resistant foodborne pathogens are transmitted from animals to humans.

Interim Progress Toward Year 2000 Objectives

Of the four Healthy People 2000 food safety objectives targeted to reducing foodborne illness, only one has been met—reducing the incidence of disease caused by four key pathogens (*Salmonella* species, *Campylobacter* species, *Escherichia coli* O157:H7, and *Listeria monocytogenes*). Two objectives show solid progress—decreasing the number of outbreaks of *Salmonella* serotype Enteritidis from 77 to 44 outbreaks per year and State agency adoption (16 States) and review (23 States plus Puerto Rico and the District of Columbia) of the *Food Code* for retail-level food establishments (1999 *Food Code* data). The consumer food safety practices objective shows improvement. In fact, the target for washing cutting boards with soap has been surpassed (79 percent) if all safe practices, such as washing with bleach or using a different cutting board following use with raw meat or poultry, are considered.

Note: Some data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Food Safety

Goal: Reduce foodborne illnesses.

Number	Objective
10-1	Foodborne infections
10-2	Outbreaks of foodborne infections
10-3	Antimicrobial resistance of *Salmonella* species
10-4	Food allergy deaths
10-5	Consumer food safety practices
10-6	Safe food preparation practices in retail establishments
10-7	Organophosphate pesticide exposure

10-1. Reduce infections caused by key foodborne pathogens.

Target and baseline:

Objective	Reduction in Infections Caused by Microorganisms	1997 Baseline	2010 Target
		Cases per 100,000 Population	
10-1a.	*Campylobacter* species	24.6	12.3
10-1b.	*Escherichia coli* O157:H7	2.1	1.0
10-1c.	*Listeria monocytogenes*	0.5	0.25
10-1d.	*Salmonella* species	13.7	6.8
10-1e.	*Cyclospora cayetanensis*	**Developmental**	
10-1f.	Postdiarrheal hemolytic uremic syndrome	**Developmental**	
10-1g.	Congenital *Toxoplasma gondii*	**Developmental**	

Target setting method: 50 percent improvement.

Data sources: Foodborne Disease Active Surveillance Network (FoodNet), CDC, NCID; FDA, CFSAN; FSIS, OPHS; and State agencies.

Potential data source: Toxoplasmosis data—National Notifiable Diseases Surveillance System (NNDSS), CDC, NCID.

Total Population, 1997	10-1a. *Campylobacter species*	10-1b. *Escherichia coli* O157:H7	10-1c. *Listeria monocytogenes*	10-1d. *Salmonella* species
	Cases per 100,000			
TOTAL	24.6	2.1	0.5	13.7
Race and ethnicity				
American Indian or Alaska Native	DSU	DSU	DSU	DSU
Native Hawaiian and other Pacific Islander	DSU	DSU	DSU	DSU
Black or African American	DSU	DSU	DSU	DSU
White	DSU	DSU	DSU	DSU

Total Population, 1997	10-1a. *Campylobacter species*	10-1b. *Escherichia coli* O157:H7	10-1c. *Listeria monocytogenes*	10-1d. *Salmonella species*
	Cases per 100,000			
	DSU	DSU	DSU	DSU
Hispanic or Latino	DSU	DSU	DSU	DSU
Not Hispanic or Latino	DSU	DSU	DSU	DSU
Black or African American	DSU	DSU	DSU	DSU
White	DSU	DSU	DSU	DSU
Gender				
Female	21.7	2.2	0.4	13.3
Male	27.5	2.0	0.5	14.0
Age				
Under 1 year	55.5	4.6	2.3	111.4
1 to 19 years	21.9	4.9	0.1	17.5
20 to 59 years	27.2	0.9	0.3	10.7
60 years and older	17.1	1.6	1.7	9.1
Family income level				
Poor	DNC	DNC	DNC	DNC
Near poor	DNC	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Campylobacteriosis and salmonellosis are the most frequently reported foodborne illnesses in the United States.[2] The emerging pathogens *E. coli* O157:H7 and *L. monocytogenes* cause infections that are less often reported but commonly more severe. *L. monocytogenes* is rare; however, septicemia and meningitis may result from infection with this organism, and up to 20 percent of patients may die.[2] Persons with altered or deficient immune response, such as infants and young children, older adults, pregnant women and their fetuses, and immunosuppressed persons, are at highest risk. Listeriosis in pregnant women may lead to miscarriage, stillbirth, or septicemia and meningitis in newborns.

Cyclospora cayetanensis, a parasite, was made a nationally notifiable disease (States report all cases to CDC) and added to FoodNet in 1998. Information about this emerging pathogen, such as the proportion of infections that are foodborne, is needed. Examination for *C. cayetanensis* is not universal in clinical laboratories; thus, data for this organism may be less reliable than for the other organisms.

The parasite *Toxoplasma gondii* causes toxoplasmosis and may cause miscarriage, stillbirth, or fetal abnormality. Although results of *Toxoplasma gondii* testing are not generally reported by clinicians, results from national surveys that include blood testing suggest that toxoplasmosis may be one of the most common infections associated with food. Blood tests reveal toxoplasmosis infections at a rate of 7.2 percent for children aged 6 to 10 years.[23] Preliminary data from a European study showed that a majority of toxoplasmosis cases were foodborne.[24] Another study found that food consumption and preparation practices accounted for five of the top six practices by pregnant women that were significantly associated with congenital toxoplasmosis.[25] The food practices were eating raw or undercooked minced meat products, eating raw or undercooked mutton, eating raw or undercooked pork or lamb, eating unwashed raw vegetables, and washing kitchen knives infrequently after preparation of raw meat and prior to handling another food item.[25] Changing the cat litter, although often thought to be the major cause of toxoplasmosis, ranked fifth in importance of the six practices. As with other parasitic diseases, diagnostic laboratory testing for toxoplasmosis often is not available or is done infrequently. Efforts are underway in the United States to make congenital toxoplasmosis a nationally notifiable disease, with serological data collection beginning in 2000.

10-2. Reduce outbreaks of infections caused by key foodborne bacteria.

Target and baseline:

Objective	Reduction in Infections Caused by Foodborne Bacteria	1997 Baseline	2010 Target
		Number of Outbreaks per Year	
10-2a.	*Escherichia coli* O157: H7	22	11
10-2b.	*Salmonella* serotype Enteritidis	44	22

Target setting method: 50 percent improvement.

Data source: Foodborne Disease Outbreak Surveillance System, CDC, NCID.

Outbreaks of *E. coli* O157:H7 have been associated with undercooked or raw ground beef, unpasteurized apple juice, and some types of fresh (raw) produce. The most frequent known cause of outbreaks of *Salmonella* Enteritidis is the consumption of food that contains undercooked or raw eggs.

10-3. Prevent an increase in the proportion of isolates of *Salmonella* species from humans and from animals at slaughter, that are resistant to antimicrobial drugs.

Target and baseline:

Objective	Prevention of Increase in Proportion of *Salmonella* Species Resistant to Antimicrobial Drugs	1997 Baseline	2010 Target
		Percent of Isolates	
	***Salmonella* from humans that are resistant to:**		
10-3a.	Fluoroquinolones	0	0
10-3b.	Third-generation cephalosporins	0	0
10-3c.	Gentamicin	3	3
10-3d.	Ampicillin	18	18
	***Salmonella* from cattle at slaughter that are resistant to:**		
10-3e.	Fluoroquinolones	**Developmental**	
10-3f.	Third-generation cephalosporins	**Developmental**	
10-3g.	Gentamicin	**Developmental**	
10-3h.	Ampicillin	**Developmental**	
	***Salmonella* from broilers at slaughter that are resistant to:**		
10-3i.	Fluoroquinolones	**Developmental**	
10-3j.	Third-generation cephalosporins	**Developmental**	
10-3k.	Gentamicin	**Developmental**	
10-3l.	Ampicillin	**Developmental**	
	***Salmonella* from swine at slaughter that are resistant to:**		
10-3m.	Fluoroquinolones	**Developmental**	
10-3n.	Third-generation cephalosporins	**Developmental**	
10-3o.	Gentamicin	**Developmental**	
10-3p.	Ampicillin	**Developmental**	

Target setting method: No increase.

Data sources: National Antimicrobial Resistance Monitoring System, CDC, NCID; FDA, CVM; FSIS, APHIS, and ARS; Foodborne Disease Active Surveillance Network (FoodNet), CDC, NCID.

10-4. (Developmental) Reduce deaths from anaphylaxis caused by food allergies.

Potential data source: National Vital Statistics System (NVSS), CDC, NCHS.

10-5. Increase the proportion of consumers who follow key food safety practices.

Target: 79 percent.

Baseline: 72 percent of consumers followed key food safety practices in 1998.

Target setting method: 10 percent improvement.

Data source: Food Safety Survey (FSS), FDA and FSIS, USDA.

Key food safety practices are based on the four FightBAC!™ Campaign messages. They are clean, wash hands and surfaces often; separate, don't cross-contaminate; cook, cook to proper temperatures; and chill, refrigerate promptly.

10-6. (Developmental) Improve food employee behaviors and food preparation practices that directly relate to foodborne illnesses in retail food establishments.

Potential data sources: GPRA (Government Performance and Results Act) Baseline Data Collection Project (on Retail Food Establishments), FDA. Followup data from the Retail Food Database of Foodborne Illness Risk Factors, FDA, CFSAN.

Five food safety risk factors related to employee behaviors and preparation practices have been identified by CDC as contributing to foodborne illness: improper holding temperatures, inadequate cooking, contaminated equipment, food from an unsafe source, and poor personal hygiene. For each year from 1988 through 1992, the most commonly reported food preparation practice that contributed to foodborne disease concerned improper holding temperature; the second concerned poor personal hygiene of food handlers. Food obtained from an unsafe source was the least commonly reported factor for all 5 years. In most outbreaks caused by bacterial pathogens, the food was stored at improper holding temperatures.[1]

To help control the risk factors, the *Food Code* provides key public health interventions: use of time-temperature control, prevention of hand contact with foods as a vehicle of contamination, employee health, demonstration of knowledge by the manager, and a consumer advisory to inform consumers of their risk when eating raw or undercooked animal foods. Proper application and implementation of these interventions are crucial to combat foodborne disease.

10-7. (Developmental) Reduce human exposure to organophosphate pesticides from food.

Potential data source: Total Diet Study, FDA, CFSAN.

The Food Quality Protection Act of 1996 mandated that EPA reassess existing standards for pesticides used on food crops. Organophosphates, a group of approximately 40 closely related pesticides, have been designated as first priority in the standards reassessment. These pesticides are used on fruits and vegetables important in the diet of children.

Related Objectives From Other Focus Areas

8. Environmental Health

8-5. Safe drinking water

8-6. Waterborne disease outbreaks

8-8. Surface water health risks

8-10. Fish contamination

8-24. Exposure to pesticides

8-25. Exposure to heavy metals and other toxic chemicals

8-29. Global burden of disease

8-30. Water quality in the U.S.-Mexico border region

14. Immunization and Infectious Diseases

14-21. Antimicrobial use in intensive care units

20. Occupational Safety and Health

20-8. Occupational skin diseases or disorders

23. Public Health Infrastructure

23-2. Public access to information and surveillance data

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Anaphylaxis: A severe allergic reaction commonly caused by certain foods. It occurs within minutes of exposure and may include hives, itching, skin swelling, blood vessel collapse, shock, and often life-threatening respiratory distress.[26]

Cephalosporins, third generation: Potent antimicrobial drugs capable of fighting a wide variety of bacterial infections. *Salmonella* species infections in certain high-risk and severely ill patients, particularly children, often are treated with such drugs.

Emerging pathogen: An illness-causing microorganism previously unknown to be a human pathogen, a foodborne pathogen not expected to occur in particular foods, or a pathogen that has caused a dramatic increase in new cases of illness.

Food Code: A book of recommendations of the U.S. Public Health Service that FDA first published in 1993 and revises every 2 years. It consists of model requirements for safeguarding public health and ensuring food is unadulterated and honestly presented to the consumer. FDA offers the *Food Code* for adoption by local, State, Tribal, and Federal government jurisdictions for administration by the units that have compliance responsibilities for food service, retail food stores, or food vending operations.

Foodborne disease or **foodborne illness:** Infection or intoxication caused by microbial or chemical contaminants in foods. Some foodborne illnesses, such as salmonellosis and staphylococcal food poisoning, can be caused by a single helping or less of a food that contains sufficient microorganisms or toxin to cause illness. Other foodborne illnesses result from eating compounds, such as naturally occurring aflatoxin, in foods over long periods of time.

Foodborne disease outbreak: When two or more cases of a similar illness result from eating the same food.[1]

Food industry: Food producers (farmers, fishers, ranchers), food processors, food storers, food warehousers and transporters, and retail food operators.

FoodNet: The Foodborne Diseases Active Surveillance Network, a collaborative project conducted by CDC, participating States, FSIS, and FDA that began in 1996. FoodNet produces national estimates of the burden and sources of specific diseases in the United States through active surveillance and other studies. California, Connecticut, Georgia, Maryland, Minnesota, New York, Oregon, and Tennessee, representing a total population of 28 million people (approximately 10 percent of the U.S. population), are the eight FoodNet sites.[27]

Good manufacturing practices (GMPs): Criteria, including regulations, that ensure that food is fit for consumption and is manufactured under sanitary conditions. These criteria address factors that affect production of safe food, including disease control, cleanliness (personal hygiene and dress codes), education, and training.

Hazard Analysis and Critical Control Points (HACCP): A science-based and systematic approach to prevent potential food safety problems by anticipating how biological, chemical, or physical hazards are most likely to occur and by installing appropriate measures to prevent them from occurring. The seven principles of HACCP are hazard analysis, determination of critical control points, specification of critical limits, monitoring, corrective actions, verification, and documentation (recordkeeping).

Hemolytic uremic syndrome (HUS), postdiarrheal: A serious, sometimes fatal complication often associated with illness caused by *Escherichia coli* O157:H7 and other shiga toxin-producing *E. coli*.[28] HUS occurs mainly in children under the age of 10 years. Renal failure, hemolytic anemia, and a severe decrease in the number of blood platelets characterize HUS.

Mycotoxins: Naturally occurring toxins formed by fungi (molds) in food and in animal feed (for example, aflatoxins, fumonisins, deoxynivalenol, and patulin).

Outbreak: See foodborne disease outbreak above.

Pathogen: A microorganism that causes illness.

Retail food industry: As covered by the *Food Code*, a level within the food industry that includes but is not limited to the following establishments: vending operations, grocery stores, other retail food outlets, and food service in restaurants and institutions.

References

1. Centers for Disease Control and Prevention (CDC). Surveillance for Foodborne-Disease. Outbreaks—United States, 1988-92. *Morbidity and Mortality Weekly Report* 45(SS-5):1-55, 1996.

2. Mead, P.S.; Slutsker, L.; Dietz, V.; McCaig, L.F.; Bresee, J.S.; Shapiro, C.; Griffin, P.M.; and Tauxe, R.V. Food-related illness and death in the United States. *Emerging Infectious Diseases* 5(5). 607-625, 1999.

3. Food and Drug Administration (FDA), U.S. Department of Agriculture (USDA), U.S. Environmental Protection Agency (EPA). *Food Safety From Farm to Table: A National Food Safety Initiative. Report to the President, May 1997.* Washington, DC: FDA, USDA, EPA, 1997.

4. U.S. Department of Health and Human Services (DHHS). Healthy People 2000 Progress Review. Washington, DC: DHHS, Public Health Service, Office of Disease Prevention and Health Promotion, 1995.

5. Lin, B.H.; Guthrie, J.; and Frazão, E. Away-from-home foods increasingly important to quality of American diet. *Agriculture Information Bulletin* No. 749. 22, 1999.

6. Altekruse, S.F.; Street, D.A.; Fein, S.B.; and Levy, A.S. Consumer knowledge of foodborne microbial hazards and food-handling practices. *Journal of Food Protection* 59:287-294, 1996.

7. National Center for Health Statistics. Healthy People 2000 Review, 1998-99. Hyattsville, MD: DHHS, Public Health Service, Office of Disease Prevention and Health Promotion, 126-127, 1999.

8. FDA. *Pesticide Program Residue Monitoring, 1997*. Washington, DC: Food and Drug Administration, 1998.

9. Agricultural Marketing Service. *Pesticide Data Program--Annual Summary, Calendar Year 1997*. Washington, DC: U.S. Department of Agriculture, 1997.

10. Kayosaari, M. Food allergy in Finnish children aged 1-6 years. *Acta Paediatrica Scandinavica* 71(5):815-819, 1982.

11. Bock, S.A. Prospective appraisal of complaints of adverse reactions to foods in children during the first three years of life. *Pediatrics* 79(5):683-688, 1987.

12. Sampson, H.A., and Metcalf, D.D. Food allergies. *Journal of the American Medical Association* 268(20):2840-2844, 1992.

13. Schwartz, H.J. Latex: A potential hidden "food" allergen in fast food restaurants. *Journal of Allergy and Clinical Immunology* 95(1, part 1):139-40, 1995.

14. Tomazic, V.J.; Shampaine, E.L.; Lamanna, A.; Withrow, T.J.; Adkinson, Jr., N.F.; and Hamilton, R.G. Cornstarch powder on latex products is an allergen carrier. *Journal of Allergy and Clinical Immunology* 93(4):751-758, 1994.

15. Yocum, M.W., and Khan, D.A. Assessment of patients who have experienced anaphylaxis: a 3-year survey. *Mayo Clinic Proceedings* 69(1):16-23, 1994.

16. Sampson, H.A. Fatal food-induced anaphylaxis. *Allergy* 53(suppl. 46):125-130, 1998.

17. Kemp, S.F.; Lockey, R.F.; Wolf, B.L.; and Lieberman, P. Anaphylaxis. *Archives of Internal Medicine* 155(16):1749-1754, 1995.

18. Anonymous. *Federal Food, Drug, and Cosmetic Act, As Amended July 1993*. Washington, DC: U.S. Government Printing Office, 1993, Section 403 (i).

19. Anonymous. *Code of Federal Regulations*, title 21, part 101, section 100 (a)(3). Washington, DC: U.S. Government Printing Office, 1998.

20. Shank, F.A. Notice to Manufacturers: Label Declaration of Allergenic Substances in Foods, 1996. Letter from FDA, Center for Food Safety and Applied Nutrition, June 10, 1996.

21. Council for Agricultural Science and Technology. *Foodborne Pathogens: Risks and Consequences*. Task Force Report No. 122, 1994.

22. Olowokure, B.; Hawker, J.; Weinberg, J.; Gill, N.; and Sufi, F. Deprivation and hospital admission for infectious intestinal diseases. *The Lancet* 353(9155):807-808, 1999.

23. National Center for Health Statistics. *National Health and Nutrition Examination Survey III, 1988-94*. Washington, DC: CDC, National Center for Infectious Diseases, unpublished data.

24. CDC. National Workshop on Toxoplasmosis: Preventing Congenital Toxoplasmosis in Atlanta, GA, September 9-10, 1998.

25. Kapperud, G.; Jenum, P.A.; Stray-Pederson, B.; Melby, K.K.; Eskild, A.; and Eng. J. Risk factors for *Toxoplasma gondii* infection in pregnancy. Results of a prospective case-control study in Norway. *American Journal of Epidemiology* 144(4):405-412, 1996.

26. W.B. Saunders Dictionary Staff. *Dorland's Illustrated Medical Dictionary*, 28th ed. Philadelphia, PA: Saunders Co., 1994, 68-69.

27. CDC. *FoodNet 1998 Surveillance Results: Preliminary Report, March 1999*. Washington, DC: the Centers, 1999.

28. Lindsay, J.A. Chronic sequelae of foodborne disease. *Emerging Infectious Diseases* 3(4):443-452, 1997.

11

Health Communication

Lead Agency: Office of Disease Prevention and Health Promotion

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Goal

Use communication strategically to improve health.

Overview

Health communication links the domains of communication and health and is increasingly recognized as a necessary element of efforts to improve personal and public health.[1, 2, 3] Health communication can contribute to all aspects of disease prevention and health promotion and is relevant in a number of contexts, including (1) health professional-patient relations; (2) individuals' exposure to, search for, and use of health information; (3) individuals' adherence to clinical recommendations and regimens; (4) the construction of public health messages and campaigns; (5) the dissemination of individual and population health risk information, that is, risk communication; (6) images of health in the mass media and the culture at large; (7) the education of consumers about how to gain access to the public health and health care systems; and (8) the development of telehealth applications.[3, 4, 5, 6, 7, 8, 9, 10, 11]

For individuals, effective health communication can help raise awareness of health risks and solutions, provide the motivation and skills needed to reduce these risks, help them to find support from other people in similar situations, and affect or reinforce attitudes.[1] Health communication also can increase demand for appropriate health services and decrease demand for inappropriate health services. It can make available information to assist in making complex choices, such as selecting health plans, care providers, and treatments.[1] For the community, health communication can be used to influence the public agenda, advocate for policies and programs, promote positive changes in the socioeconomic and physical environments, improve the delivery of public health and health care services, and encourage social norms that benefit health and quality of life.[2]

The practice of health communication has contributed to health promotion and disease prevention in several areas. One is the improvement of interpersonal and group interactions in clinical situations (for example, provider-patient, provider-provider, and among members of a health care team) through the training of health professionals and patients in effective communication skills.[3, 4] Collaborative and partnership relationships are enhanced when all parties are capable of good communications.

Another is the dissemination of health messages through public education campaigns that seek to change the social climate to encourage healthy behaviors, create awareness, change attitudes, and motivate individuals to adopt recommended behaviors.[6, 9, 10] Campaigns traditionally have relied on mass communication (such as public service announcements on billboards, radio, and television) and

Attributes of Effective Health Communication

- ***Accuracy***: The content is valid and presented accurately.
- ***Availability***: The content (whether targeted message or other information) is delivered or placed where the audience can access it. Placement varies according to audience, message complexity, and purpose, ranging from interpersonal and social networks to billboards and mass transit signs to prime-time TV or radio, to public kiosks (print or electronic), to the Internet.
- ***Balance***: Where appropriate, the content presents the benefits and risks of potential actions or recognizes different but valid perspectives on the issue.
- ***Consistency***: The content remains internally consistent over time and also is consistent with information from other sources (the latter is a problem when other widely available content is not accurate or reliable).
- ***Culturally competent***: The design, implementation, and evaluation process addresses special issues for select population groups (for example, ethnic, racial, and linguistic) and also educational levels and disability.
- ***Evidence-based***: The content and strategies are based on formative research with the intended audience and on applicable findings from other communication research.
- ***Reach***: The content gets to or is available to the largest possible number of people in the target population.
- ***Reliability***: The source of the content is credible, and the content itself is kept up to date.
- ***Repetition***: The delivery of/access to the content is continued or repeated over time, both to reinforce the impact with a given audience and to reach new generations.
- ***Timeliness***: The content is provided or available when the audience is most receptive to, or in need of, the specific information.
- ***Understandable***: The reading or language level and format (including multimedia) are appropriate for the specific audience.

educational messages in printed materials (such as pamphlets) to deliver health messages. Other campaigns have integrated mass media with community-based programs. Many campaigns have used social marketing techniques.

Increasingly, health improvement activities are taking advantage of computer-based technologies, such as CD-ROM and the World Wide Web, that can target audiences, tailor messages, and engage people in interactive, ongoing exchanges about health.[4, 11, 12] An emerging area is health communication to support community-centered prevention.[13] Community-centered prevention shifts attention from individual to group-level change and emphasizes the empowerment of individuals and communities to effect change on multiple levels.

A set of Leading Health Indicators, which focus on key health improvement activities and are described in the first section of *Healthy People 2010*, all depend to some extent on effective health communication. The promotion of regular physical activity, healthy weight, good nutrition, and responsible sexual behavior will require a range of information, education, and advocacy efforts, as will the reduction of tobacco use, substance abuse, injuries, and violence. For example, advocacy efforts to change prices and availability of tobacco and alcohol products have resulted in lower consumption levels. (See Focus Area 26. Substance Abuse and Focus Area 27. Tobacco Use.) Effective counseling and patient education for behavior change require health care providers and patients to have good communication skills. Public information campaigns are used to promote increased fruit and vegetable consumption (5-A-Day for Better Health!), higher rates of preventive screening (mammogram and colonoscopy), higher rates of clinical preventive services (immunization), and greater rates of adoption of risk-reducing behaviors (Back to Sleep and Buckle Up for Safety).

Health communication alone, however, cannot change systemic problems related to health, such as poverty, environmental degradation, or lack of access to health care, but comprehensive health communication programs should include a systematic exploration of all the factors that contribute to health and the strategies that could be used to influence these factors. Well-designed health communication activities help individuals better understand their own and their communities' needs so that they can take appropriate actions to maximize health.

Issues and Trends

The environment for communicating about health has changed significantly. These changes include dramatic increases in the number of communication channels and the number of health issues vying for public attention as well as consumer demands for more and better quality health information, and the increased sophistication of marketing and sales techniques, such as direct-to-consumer advertising of prescription drugs and sales of medical devices and medications over the Internet. The expansion of communication channels and health issues on the public agenda increases competition for people's time and attention; at the same time, people have more opportunities to select information based on their personal interests and preferences. The trend toward commercialization of the Internet suggests that the marketing model of other mass media will be applied to emerging media, which has important consequences for the ability of noncommercial and public health-oriented health communications to stand out in a cluttered health information environment.

Communication occurs in a variety of contexts (for example, school, home, and work); through a variety of channels (for example, interpersonal, small group, organizational, community, and mass media) with a variety of messages; and for a variety of reasons. In such an environment, people do not pay attention to all communications they receive but selectively attend to and purposefully seek out information.[8] One of the main challenges in the design of effective health communication programs is to identify the optimal contexts, channels, content, and reasons that will motivate people to pay attention to and use health information.

The diversity of the U.S. population suggests that a one-dimensional approach to health promotion, such as reliance on mass media campaigns or other single-component communication activities, is insufficient to achieve program goals. Successful health promotion efforts increasingly rely on multidimensional interventions to reach diverse audiences about complex health concerns, and communication is integrated from the beginning with other components, such as community-based programs, policy changes, and improvements in services and the health delivery system.[10, 14] Research shows that health communication best supports health promotion when multiple communication channels are used to reach specific audience segments with information that is appropriate and relevant to them.[6] An important factor in the design of multidimensional programs is to allot sufficient time for planning, implementation, and evaluation and sufficient money to support the many elements of the program. Public-private partnerships and collaborations can leverage resources to strengthen the impact of multidimensional efforts. Collaboration can have the added benefit of reducing message clutter and targeting health concerns that cannot be fully addressed by public resources or market incentives alone.

Research indicates that effective health promotion and communication initiatives adopt an audience-centered perspective, which means that promotion and communication activities reflect audiences' preferred formats, channels, and contexts.[6] An audience-centered perspective also reflects the realities of people's everyday lives and their current practices, attitudes and beliefs, and lifestyles. Some specific audience characteristics that are relevant include gender, age, education and income levels, ethnicity, cultural beliefs and values, primary language(s), and physical and mental functioning. Additional considerations include their experience with the health care system, attitudes toward different types of health problems, and willingness to use certain types of health services. Particular attention should be paid to the needs of underserved audience members.

Targeting specific segments of a population and tailoring messages for individual use are two methods to make health promotion activities relevant to audiences.[15] Examples include the targeted use of mass media messages for adolescent girls at increased risk of smoking;[16] the tailoring of computer-generated nutritional information to help individuals reduce their fat intake and increase fruit and vegetable consumption;[17] and a national telephone service for Spanish speakers to obtain AIDS information as well as counseling and referrals.[18]

Interventions that account for the cultural practices and needs of specific populations have shown some success. For example, a breastfeeding promotion program among Navajo women that was based on investigations of their cultural beliefs about infant feeding practices showed increased rates of breastfeeding.[19] Similarly, an intervention that used the novela, a popular form of Latino mass media, to reach young people and their parents sought to improve parent-youth communication in Hispanic families and to influence the adolescents' attitudes about alcohol.[20]

Advances in medical and consumer health informatics are changing the delivery of health information and services and are likely to have a growing impact on individual and community health.[4, 11, 21, 3] The convergence of media (computers, telephones, television, radio, video, print, and audio) and the emergence of the Internet create a nearly ubiquitous networked communication infrastructure. This infrastructure facilitates access to an increasing array of health information and health-related support services and extends the reach of health communication efforts. Delivery channels such as the Internet expand the choices available for health professionals to reach patients and consumers and for patients and consumers to interact with health professionals and with each other (for example, in online support groups).

Compared to traditional mass media, interactive media may have several advantages for health communication efforts. These advantages include (1) improved access to personalized health information; (2) increased confidentiality because of the opportunity to seek sensitive information anonymously; (3) access to health information, support, and services on demand; (4) enhanced ability to distribute materials widely and update content or functions rapidly; (5) just-in-time expert decision support; and (6) more choices for consumers.[4, 21] The health impact of interactivity, customization, and enhanced multimedia is just beginning to be explored, and already interactive health communication technologies are being used to exchange information, facilitate informed decisionmaking, promote healthy behaviors, enhance peer and emotional support, promote self-care, manage demand for health services, and support clinical care.

Widespread availability and use of interactive health communication and telehealth applications create at least two serious challenges. One is related to the risks associated with consumers' use of poor quality health information to make decisions. Concerns are growing about the Web making available large amounts of information that may be misleading, inaccurate, or inappropriate, which may put consumers at unnecessary risk. Although many health professionals agree that the Internet is a boon for consumers because they have easier access to much more information than before, these professionals are concerned that poor quality of a lot of information on the Web will undermine informed decisionmaking. These concerns are driving the development of a quality standards agenda to help health professionals and consumers find reliable Web sites and health information on the Internet. An expert panel convened by the Department of Health and Human Services describes high quality health information as accurate, current, valid, appropriate, intelligible, and free of bias.[4]

The other challenge is related to the privacy and confidentiality concerns raised by the collection, transformation, and distribution of personal health information through electronic means. The privacy and confidentiality of personal health information are major issues for consumers, and these concerns are magnified when information is collected, stored, and made available online.[4] As the availability and variety of interactive health applications grow, consumer confidence about developers' ability or intent to ensure privacy will be challenged. In the near future, personal health information will be collected during both clinical and nonclinical encounters in disparate settings, such as schools, mobile clinics, public places, and homes, and will be made available for administrative, financial, clinical, and research purposes. Although public health and health services research may require de-identified personal health information, policies and procedures to protect privacy will need to ensure a balance between confidentiality and appropriate access to personal health information.

The trend of rapidly expanding opportunities in health communication intersects with recent demands for more rigorous evaluation of all aspects of the health care and public health delivery systems and for evidence-based practices.[22] Numerous studies of provider-patient communication support the connection among the quality of the provider-patient interaction, patient behavior, and health outcomes.[23] As the knowledge base about provider-patient interactions increases, a need becomes apparent for the development of practice guidelines to promote better provider-patient communication. Additional evidence about the process of health information-seeking and the role of health information in decisionmaking also is needed. Health communication campaigns could benefit as well from more rigorous formative research and evaluation of outcomes. Expected outcomes should be an important consideration and central element of campaign design. As health communication increasingly involves electronic media, new evaluation approaches are emerging.[4, 24, 25, 26] Given the critical role that communication plays in all aspects of public health and health care, health communication and outcomes research should become more tightly linked across all health communication domains.

Because national data systems will not be available in the first half of the decade for tracking progress, one subject of interest concerning health communication is not addressed in this focus area's objectives. Representing a research and data collection agenda for the coming decade, the topic covers persons who report being satisfied with the health information they received during their most recent search for such information. Health-conscious consumers are increasingly proactive in seeking out health information. Individuals want information about prevention and wellness as much as about medical problems. Public health and the medical community share an interest in promoting—and sustaining—"informed decisions" for better health. Surveys suggest that people want to get health information from a professional and that counseling by health professionals can be effective both in reducing lifestyle risks and supporting self-management of chronic diseases like diabetes. (See Focus Area 1. Access to Quality Health Services and Focus Area 7. Educational and Community-Based Programs.) However, diminished time in clinical visits and some clinicians' discomfort with open communication work against optimum information exchange. In addition, many people want information to be available when and where they need it most. Health information should be not only easily accessible but also of good quality and relevant for the needs of the person. The increasing use of the Internet as a source for health information will require greater awareness of the importance of the quality of information.

Disparities

Often people with the greatest health burdens have the least access to information, communication technologies, health care, and supporting social services. Even the most carefully designed health communication programs will have limited impact if underserved communities lack access to crucial health professionals, services, and communication channels that are part of a health improvement project.

Research indicates that even after targeted health communication interventions, low education and income groups remain less knowledgeable and less likely to change behavior than higher education and income groups, which creates a "knowledge gap" and leaves some people "chronically uninformed."[27] With communication technologies, the disparity in access to electronic information resources is commonly referred to as the "digital divide."[28] The digital divide becomes more critical as the amount and variety of health resources available over the Internet increase and as people need more sophisticated skills to use electronic resources.[29] Equitably distributed health communication resources and skills, and a robust communication infrastructure can contribute to the closing of the digital divide and the national goal of Healthy People 2010 to eliminate health disparities.

Even with access to information and services, however, disparities may still exist because many people lack health literacy.[30] Health literacy is increasingly vital to help people navigate a complex health system and better manage their own health. Differences in the ability to read and understand materials related to personal health as well as navigate the health system appear to contribute to health disparities. People with low health literacy are more likely to report poor health, have an incomplete understanding of their health problems and treatment, and be at greater risk of hospitalization.[31] The average annual health care costs of persons with very low literacy (reading at grade two or below) may be four times greater than for the general population.[32] An estimated 75 percent of persons in the United States with chronic physical or mental health problems are in the limited literacy category.[33] People with chronic conditions, such as asthma, hypertension, and diabetes, and low reading skills have been found to have less knowledge of their conditions than people with higher reading skills.[34, 35]

Although the majority of people with marginal or low literacy are white native-born Americans,[36] changing demographics suggest that low literacy is an increasing problem among certain racial and ethnic groups, non-English-speaking populations, and persons over the age of 65 years. One study of Medicare enrollees found that 34 percent of English speakers and 54 percent of Spanish speakers had inadequate or marginal health literacy.[37] As the U.S. population ages, low health literacy among elderly people is potentially a large problem. Nearly half of the people in the elderly population have low reading skills, and reading ability appears to decline with age. A study of patients 60 years and older at a public hospital found that 81 percent could not read and understand basic materials such as prescription labels and appointments.[38]

Opportunities

For health communication to contribute to the improvement of personal and community health during the first decade of the 21st century, stakeholders, including health professionals, researchers, public officials, and the lay public, must collaborate on a range of activities. These activities include (1) initiatives to build a robust health information system that provides equitable access; (2) development of high-quality, audience-appropriate information and support services for specific health problems and health-related decisions for all segments of the population, especially underserved persons; (3) training of health professionals in the science of communication and the use of communication technologies; (4) evaluation of interventions; and (5) promotion of a critical understanding and practice of effective health communication.

A national health information infrastructure (NHII) provides a framework that stakeholders can use to communicate with each other and to transform data into useful information on multiple levels. Efforts are underway throughout the world to develop integrated national and global health information infrastructures to support health improvements. In the United States, the National Committee on Vital and Health Statistics (NCVHS) is advising the Secretary of Health and Human Services on the data and infrastructure needs of the country. The NCVHS defines NHII as all of the technologies, standards, applications, systems, values, and laws that support individual health, health care, and public health. Issues related to technical standards, privacy and confidentiality, and regulatory guidelines are being addressed by the public and private sectors.

The infrastructure makes it possible for people not only to use health information designed by others, but also to create resources to manage their own health and to influence the health of their communities. For example, community groups could use computers to gain access to survey information about the quality of life in their neighborhoods and apply this information to create an action plan to present to local elected and public health officials. Information is a critical element of informed participation and decisionmaking, and appropriate, quality information and support services for all are empowering and democratic.

As patients and consumers become more knowledgeable about health information, services, and technologies, health professionals will need to meet the challenge of becoming better communicators and users of information technologies. Health professionals need a high level of interpersonal skills to interact with diverse populations and patients who may have different cultural, linguistic, educational, and socioeconomic backgrounds. Health professionals also need more direct training in and experience with all forms of computer and telecommunication technologies. In addition to searching for information, patients and consumers want to use technology to discuss health concerns, and health professionals need to be ready to respond. To support an increase in health communication activities, research and evaluation of all forms of health communication will be necessary to build the scientific base of the field and the practice of evidence-based health communication. Collectively, these opportunities represent important areas to make significant improvements in personal and community health.

Interim Progress Toward Year 2000 Objectives

Health Communication is a new focus area for Healthy People 2010.

Health Communication

Goal: Use communication strategically to improve health.

Number	Objective
11-1	Households with Internet access
11-2	Health literacy
11-3	Research and evaluation of communication programs
11-4	Quality of Internet health information sources
11-5	Centers for excellence
11-6	Satisfaction with providers' communication skills

11-1. Increase the proportion of households with access to the Internet at home.

Target: 80 percent.

Baseline: 26 percent of households in 1998.

Target setting method: Better than the best.

Data source: School Enrollment Supplement to the Current Population Survey, U.S. Department of Commerce, Bureau of the Census.

Households, 1998	**Internet Access at Home** Percent
TOTAL	26
Race and ethnicity	
American Indian or Alaska Native	19
Asian or Pacific Islander	36
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA
White	DNA
Hispanic or Latino	13
Not Hispanic or Latino	DNA
Black or African American	11
White	30
Gender (head of household)	
Female	DNC
Male	DNC
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC
Education level (head of household)	
Less than high school	DNC
High school	DNC

Households, 1998	Internet Access at Home
	Percent
At least some college	DNC
Geographic location	
Urban	28
Rural	22

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Many health care organizations and public service agencies use the Internet as one of their main channels for information delivery. Access to the Internet and subsequent technologies is likely to become essential to gain access to health information, contact health care organizations and health professionals, receive services at a distance, and participate in efforts to improve local and national health.[4, 11] The integration of communication media means electronic access to health information not only via computers, but also with Web-enabled televisions and telephones, handheld devices, and other emerging technologies. Technical literacy, or the ability to use electronic technologies and applications, will be essential to gain access to this information.

Internet availability in the home is an important indicator of equitable access among population groups. An increasing number of people have access to the Internet at work and public facilities, such as libraries and community centers, but several limitations affect the use of online health information and support in these settings. Some employers monitor electronic mail and the types of sites visited by employees. Access in public settings may be problematic because of privacy and confidentiality concerns, and access may be needed during times when these facilities are unavailable. Because of the potentially sensitive nature of health-related uses of the Internet, access at home is essential.

Although the proportion of people with access to the Internet has risen dramatically since 1995, many segments of the population lack access, such as low-income and rural households; persons with less education; and certain racial and ethnic groups, such as African Americans and Hispanics.[28] Internet access rates vary considerably according to income. Only 11 percent of households earning less than $24,999 have access, whereas 19 percent are connected among those earning $25,000 to $34,999; 30 percent access among those earning $35,000 to $49,999; and 52 percent of households with $50,000 or greater in income have an Internet connection.[28] Barriers to Internet access include cost, lack of services in certain communities, limited literacy, lack of familiarity with different technologies, and, especially for people with disabilities, inaccessible formats that limit appropriate and effective technology use. Initiatives to promote universal access to the Internet will involve public and private sector stakeholders, particularly government agencies and technology corporations.

11-2. (Developmental) Improve the health literacy of persons with inadequate or marginal literacy skills.

Potential data source: National Adult Literacy Survey, 2002, U.S. Department of Education.

Responses from the National Adult Literacy Survey indicate that approximately 90 million adults in the United States have inadequate or marginal literacy skills.[36] Health literacy is a "constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment. Patients with adequate health literacy can read, understand, and act on health care information."[37] Written information is not the only way to communicate about health, but a great deal of health education and promotion are organized around the use of print materials, usually written at the 10th grade level and above. These materials are of little use to people who have limited literacy skills.[38] The result is that a very large segment of the population is denied the full benefits of health information and services.

Closing the gap in health literacy is an issue of fundamental fairness and equity and is essential to reduce health disparities. Public and private efforts need to occur in two areas: the development of appropriate written materials and improvement in skills of those persons with limited literacy. The knowledge exists to create effective, culturally and linguistically appropriate, plain language health communications. Professional publications and Federal documents provide the criteria to integrate and apply the principles of organization, writing style, layout, and design for effective communication.[39, 40] These criteria should be widely distributed and used. Many organizations such as public and medical libraries, voluntary, professional, and community groups, and schools could offer health literacy programs that target skill improvement for low-literacy and limited English proficient individuals. If appropriate materials exist and people receive the training to use them, then measurable improvements in health literacy for the least literate can occur.

11-3. (Developmental) Increase the proportion of health communication activities that include research and evaluation.

Potential data sources: Sponsored survey of *Federal Register* notices; Grantmakers in Health; National Health Council.

Effective health communication programs are built on sound research and evaluation. Meaningful research and evaluation are not afterthoughts but integral parts of initial program design. Research provides the ideas and tools to design and carry out formative, process, and outcome evaluations to improve health communication efforts, certify the degree of change that has occurred, and identify programs, or elements of programs, that are not working.[1, 10] Research and evaluation systematically obtain information that can be used to refine the design, development, implementation, adoption, redesign, and overall quality of a communication intervention.[41, 42]

Programs funded by Federal, philanthropic, and not-for-profit organizations could be strengthened with requirements for a minimum set of evaluation activities and specific measurements. The level of research and evaluation required should reflect the costs, scope, and potential impact (in terms of benefit or harm) of the communication activity proposed. At a minimum, programs should be expected to conduct appropriate audience testing for need, cultural and linguistic competence, comprehension, and receptivity. Requirements and specifications for evaluation could be set for grant-funded communication programs and included in requests for funding proposals and grant program guidelines as well as for programs directly funded and implemented by public or private sector organizations by including research and evaluation activities in their work plans.

11-4. (Developmental) Increase the proportion of health-related World Wide Web sites that disclose information that can be used to assess the quality of the site.

Potential data sources: Health on the Net Foundation; Internet Healthcare Coalition.

With the rapidly growing volume of health information, advertising, products, and services available on the Internet, serious concerns arise regarding the accuracy, appropriateness, and potential health impact of these sites.[4, 21] People are using the Internet to look up information, purchase medications, consult remotely with providers, and maintain their personal health records. Approximately 70 million persons in the United States use the Internet for health-related reasons,[43] and the potential for harm from inaccurate information, inferior quality goods, and inappropriate services is significant. Many initiatives are under way to identify appropriate and feasible approaches to evaluate online health sites.[26] Professional associations are issuing guidelines and recommendations.[44] Federal agencies such as the Federal Trade Commission are actively monitoring and sanctioning owners of Web sites that are false or misleading,[45] and developers and purchasers of online health resources are being urged to adopt standards for quality assurance.[4]

To allow users to evaluate the quality and appropriateness of Internet health resources, health-related Web sites should publicly disclose the following essential information about their site:[4] (1) the identity of the developers and sponsors of the site (and how to contact them) and information about any potential conflicts of interest or biases; (2) the explicit purpose of the site, including any commercial purposes and advertising; (3) the original sources of the content on the site; (4)

how the privacy and confidentiality of any personal information collected from users is protected; and (5) how the site is evaluated and updated. An additional mark of quality which should be present in a Web site relates to the site's accessibility by all users. Contents of the site should be presented in a way that it can be used by people with disabilities and with low-end technology.

11-5. (Developmental) Increase the number of centers for excellence that seek to advance the research and practice of health communication.

Potential data sources: Health Communication Interest Group, American Public Health Association; Society for Social Marketing; Association of Schools of Public Health; Health Communication Divisions, International Communication Association and National Communication Association.

To enlarge the knowledge base of health communication and incorporate it into health promotion practice, a research and training infrastructure is needed to develop, model, and coordinate activities. For this purpose, centers for excellence located in academic institutions, national organizations, or research centers would be instrumental to meet scientific and practical needs. The centers would be responsible for an array of activities, such as (1) promoting the adoption of health communication theories and practices in health care, disease prevention, and health promotion initiatives; (2) developing and disseminating quality standards; (3) coordinating initiatives to develop a consensus research agenda; (4) developing systems to identify and assess health communication research; (5) evaluating communication strategies, messages, materials, and resources; (6) fostering networking and collaboration among health communicators, health educators, and other health professionals; (7) promoting health communication skills training for health professionals; and (8) promoting research and dissemination activities among specific population groups.

These centers should provide expert staff, model curricula with core competencies in health communication and media technologies, equipped media labs, research seminars, continuing education and distance learning courses, and training and placement programs to expand the pool of health communication professionals and health professionals with communication skills. The centers also could create databases that would catalog items such as formative and outcomes research studies and reports and partner with existing governmental dissemination networks to make data publicly available. Centers for excellence in health communication could be funded through Federal grants, foundations, or private sector health care organizations.

11-6. (Developmental) Increase the proportion of persons who report that their health care providers have satisfactory communication skills.

Potential data sources: National Committee for Quality Assurance; Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP; National Health Interview Survey (NHIS), CDC, NCHS; industry surveys (FIND/SVP, Nielsen, Jupiter Communications).

Good provider-patient communication contributes to quality care and improved health status. Patients' assessment of their providers' communication skills is important for individuals with a usual source of care as well as for those without, who may have less frequent contact with the medical care system. Studies indicate that patients find communicating with their health care providers difficult[23, 46] and report that providers do not give them enough information, even though they highly value the information and want to know more.[47] Clear, candid, accurate, culturally and linguistically competent provider-patient communication is essential for the prevention, diagnosis, treatment, and management of health concerns.[23]

Effective communication underpins prevention and screening efforts at the clinical level, when providers have the opportunity to engage in one-on-one counseling and supply information that is culturally and linguistically appropriate and delivered at the person's health literacy level. Diagnoses and treatments require doctors to negotiate a common understanding with patients about what is to be done. The quality of provider-patient communication can affect numerous outcomes, including patient adherence to recommendations and health status.[48] Appropriate information and communication with a provider not only can relieve patients' anxieties, but also can help patients understand their choices, allow them to participate in informed decisionmaking, and better manage their own health concerns.

Related Objectives From Other Focus Areas

1. Access

1-3. Counseling about health behaviors

1-12. Single toll-free number for poison control centers

2. Arthritis, Osteoporosis, and Chronic Back Conditions

2-8. Arthritis education

3. Cancer

3-10. Provider counseling about preventive measures

4. Chronic Kidney Disease

4-3. Counseling for chronic kidney failure care

5. Diabetes

5-1. Diabetes education

7. Educational and Community-Based Programs

7-2. School health education

7-3. Health-risk behavior information for college and university students

7-5. Worksite health promotion programs

7-7. Patient and family education

7-8. Satisfaction with patient education

7-9. Health care organization sponsorship of community health promotion activities

7-10. Community health promotion programs

7-11. Culturally appropriate community health promotion programs

9. Family Planning

9-11. Pregnancy prevention education

10. Food Safety

10-5. Consumer food safety practices

12. Heart Disease and Stroke

12-2. Knowledge of symptoms of heart attack and importance of dialing 911

12-4. Bystander response to cardiac arrest

12-8. Knowledge of early warning symptoms of stroke

13. HIV

13-8. HIV counseling and education for persons in substance abuse treatment

13-9. HIV/AIDS, STD, and TB education in State prisons

13-10. HIV counseling and testing in State prisons

16. Maternal, Infant, and Child Health

16-7. Childbirth classes

16-13. Infants put to sleep on their back

17. Medical Product Safety

17-3. Provider review of medications taken by patients

17-4. Receipt of useful information from pharmacies

17-5. Receipt of oral counseling from prescribers and dispensers

17-6. Blood donations

19. Nutrition and Overweight

19-16. Worksite promotion of nutrition education and weight management

19-17. Nutrition counseling for medical conditions

23. Public Health Infrastructure

23-2. Public access to information and surveillance data

24. Respiratory Diseases

24-6. Patient education

25. Sexually Transmitted Diseases

25-15. Sexual behavior messages on television

26. Substance Abuse

26-17. Perception of risk associated with substance abuse

27. Tobacco Use

27-15. Tobacco advertising and promotion targeting adolescents and young adults

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Accuracy: Content that is valid and without errors of fact, interpretation, or judgment.

Advocacy: Communication directed at policymakers and decisionmakers to promote policies, regulations, and programs to bring about change.

Availability: Content (whether targeted message or other information) that is delivered or placed where the audience can access it. Placement varies according to audience, message complexity, and purpose—from interpersonal and social networks to billboards, mass transit signs, prime-time TV, and radio and from public kiosks (print or electronic) to the Internet.

Balance: Where appropriate, content that fairly and accurately presents the benefits and risks of potential actions or recognizes different but valid perspectives on an issue.

Consistency: Content that remains internally consistent over time and also is consistent with information from other sources.

Consumer health informatics: Interactive health communication (see below) focusing on consumers.

Consumer health information: Information designed to help individuals understand their health and make health-related decisions for themselves and their families.

Culturally competent: The design, implementation, and evaluation process that accounts for special issues of select population groups (ethnic and racial, linguistic) as well as differing educational levels and physical abilities.

Decision support systems: Computer software programs designed to assist diagnostic and treatment decisions. Examples include drug alert notification systems, prompts to implement practice guidelines, and health risk appraisals.

Evidence based: Comprehensive review and rigorous analysis of relevant scientific evidence to formulate practice guidelines, performance measures, review criteria, performance measures, and technology assessments[22] for telehealth applications.[4, 24]

Formative research: Assesses the nature of the problem, the needs of the target audience, and the implementation process to inform and improve program design. Formative research is conducted both prior to and during program development to adapt the program to audience needs. Common methods include literature reviews, reviews of existing programs, and surveys, interviews, and focus group discussions with members of the target audience.

Health communication: The art and technique of informing, influencing, and motivating individual, institutional, and public audiences about important health issues. The scope of health communication includes disease prevention, health promotion, health care policy, and the business of health care, as well as enhancement of the quality of life and health of individuals within the community.[49]

Health education: Any planned combination of learning experiences designed to predispose, enable, and reinforce voluntary behavior conducive to health in individuals, groups, or communities.[50]

Health literacy: The capacity to obtain, interpret, and understand basic health information and services and the competence to use such information and services to enhance health. (See also *Literacy*.)

Health promotion: Any planned combination of educational, political, regulatory, and organizational supports for actions and conditions of living conducive to the health of individuals, groups, or communities.

Interactive health communication: The interaction of an individual with an electronic device or communication technology to access or transmit health information or to receive guidance on a health-related issue.[51]

Internet: A worldwide interconnection of computer networks operated by government, commercial, and academic organizations and private citizens.

Literacy: The ability to read, write, and speak in English and to compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and develop one's knowledge and potential.[51]

Medical informatics: A field of study concerned with the broad range of issues in the management and use of biomedical information, including medical computing and the study of the nature of medical information itself.[12]

Outcome evaluation (sometimes called "impact evaluation"): Examines the results of a communication intervention, including changes in awareness, attitudes, beliefs, actions, professional practices, policies, costs, and institutional or social systems.

Patient communication: Information for individuals with health conditions to help them maximize recovery, maintain therapeutic regimens, and understand alternative approaches. Patient communication includes educational resources, provider-patient communication, and, increasingly, peer-to-peer communication.

Process evaluation: Monitors the administrative, organizational, or other operational characteristics of an intervention. Process evaluation includes monitoring the dissemination of communication products to intended users (whether gatekeepers or audiences) and audience members' exposure to a message. For an interactive health communication application, process evaluation may include testing how the application functions.

Reach: Information that gets to or is available to the largest possible number of people in the target population.

Reliability: Content that is *credible, in terms of its* source and is kept up to date.

Repetition: Delivery of and access to content continued or repeated over time, both to reinforce the impact with a given audience and to reach new generations.

Risk communication: Engaging communities in discussions about environmental and other health risks and about approaches to deal with them. Risk communication also includes individual counseling about genetic risks and consequent choices.

Social marketing: The application of marketing principles and techniques to program development, implementation, and evaluation to promote healthy behaviors or reduce risky ones.[53, 54]

Tailoring: Creating messages and materials to reach one specific person, based on characteristics unique to that person, related to the outcome of interest, and derived from an assessment of that individual.[15]

Targeting: Creating messages and materials intended to reach a specific segment of a population, usually based on one or more demographic or other characteristics shared by its members.[15]

Telehealth: The application of telecommunication and computer technologies to the broad spectrum of public health and medicine.

Telemedicine: The use of electronic information and communication technologies to provide clinical care across distance.[54]

Timelessness: Content that is provided or available when the audience is most receptive to, or in need of, the specific information.

Underserved: Individuals or groups who lack access to health services or information relative to the national average. The underserved population may include residents of rural, remote, or inner-city areas; members of certain racial and ethnic groups; socioeconomically disadvantaged persons; or people with disabilities.

Understandable: Reading or language level and format (including multimedia) that are appropriate for a specific audience.

World Wide Web (Web): An international virtual network composed of Internet host computers that can be accessed by graphical browsers.

References

1. National Cancer Institute. *Making Health Communications Work.* Pub. No. NIH 89-1493. Washington, DC: U.S. Department of Health and Human Services, 1989.

2. Piotrow, P.T.; Kincaid, D.L.; Rimon, II, J.G.; et al. *Health Communication.* Westport, CT: Praeger, 1997.

3. Jackson, L.D., and Duffy, B.K., eds. *Health Communication Research.* Westport, CT: Greenwood, 1998.

4. Science Panel on Interactive Communication and Health. *Wired for Health and Well-Being: the Emergence of Interactive Health Communication.* Eng, T.R., and Gustafson, D.H. (eds.). Washington DC: U.S.

Department of Health and Human Services, April 1999.

5. Northouse, L.L., and Northouse, P.G. *Health Communication: Strategies for Health Professionals*, 3rd ed. Stamford, CT: Appleton & Lange, 1998.

6. Maibach, E., and Parrott, R.L. *Designing Health Messages*. Thousand Oaks, CA: Sage Publications, 1995.

7. Ray, E.B., and Donohew, L., eds. *Communication and Health: Systems and Applications*. Hillsdale, NJ: Lawrence Erlbaum Associates, 1990.

8. Freimuth, V.S.; Stein, J.A.; and Kean, T.J. *Searching for Health Information: the Cancer Information Service Model*. Philadelphia: University of Pennsylvania Press, 1989.

9. Atkin, C., and Wallack, L., eds. *Mass Communication and Public Health*. Newbury Park, CA: Sage Publications, 1990.

10. Backer, T.E.; Rogers, E.M.; and Sopory, P. *Designing Health Communication Campaigns: What Works?* Newbury Park, CA: Sage Publications, 1992.

11. Harris, L.M., ed. Health and the New Media. *Technologies Transforming Personal and Public Health*. Mahwah, NJ: Lawrence Erlbaum Associates, 1995.

12. Street, R.L.; Gold, W.R.; and Manning, T., eds. *Health Promotion and Interactive Technology: Theoretical Applications and Future Directions*. Mahwah, NJ: Lawrence Erlbaum Associates, 1997.

13. Finnegan, Jr., J.R., and Viswanath, K. Health and Communication: Medical and Public Health Influences on the Research Agenda. In: Ray, E.B., and Donohew, L. *Communication and Health: Systems and Applications*. Hillsdale, NJ: Lawrence Erlbaum Associates, 1990.

14. Simons-Morton, B.G.; Donohew, L.; and Crump, A.D. Health communication in the prevention of alcohol, tobacco, and drug use. *Health Education & Behavior* 24:544-554, 1997.

15. Kreuter, M.W.; Strecher, V.J.; and Glassman, B. One size does not fit all: The case for tailoring cancer prevention materials. *Annals of Behavioral Medicine*, in press, 1999.

16. Worden, J.K.; Flynn, B.S.; Solomon, L.J.; et al. Using mass media to prevent cigarette smoking among adolescent girls. *Health Education Quarterly* 23:453-468, 1996.

17. Brug, J.; Glanz, K.; Van Assema, P.; et al. The impact of computer-tailored feedback and iterative feedback on fat, fruit, and vegetable intake. *Health Education & Behavior* 25:517-531, 1998.

18. Scott, S.A.; Jorgensen, C.M.; and Suarez, L. Concerns and dilemmas of Hispanic AIDS information seekers: Spanish-speaking callers to the CDC National AIDS hotline. *Health Education & Behavior* 25(4):501-516, 1998.

19. Wright, A.L.; Naylor, A.; Wester, R.; et al. Using cultural knowledge in health promotion: Breastfeeding among the Navajo. *Health Education & Behavior* 24:625-639, 1997.

20. Lalonde, B.; Rabinowitz, P.; Shefsky, M.L.; et al. La Esperanza del Valle: Alcohol prevention novelas for Hispanic youth and their families. *Health Education & Behavior* 24:587-602, 1997.

21. Robinson, T.N.; Patrick, K.; Eng, T.R.; et al., for the Science Panel on Interactive Communication and Health. An evidence-based approach to interactive health communication: A challenge to medicine in the Information Age. *Journal of the American Medical Association* 280:1264-1269, 1998.

22. Agency for Health Care Policy and Research. *Evidence-based Practice Centers*. RFP No. AHCPR-97-0001. Washington, DC: U.S. Department of Health and Human Services, 1997.

23. Roter, D.L., and Hall, J.A. Doctors Talking with Patients/Patients Talking with Doctors: Improving Communication in Medical Visits. Westport, CT: Auburn House, 1992.

24. Committee on Evaluating Clinical Applications of Telemedicine. *Telemedicine: A Guide to Assessing Telecommunications for Health Care*. Field, M.J. (ed.). Washington, DC: National Academy Press, 1996.

25. Anderson, J.G.; Aydin, C.E.; and Jay, S.J., eds. *Evaluating Health Care Information Systems*. Thousand Oaks, CA: Sage Publications, 1994.

26. Kim, P.; Eng, T.R.; Deering, M.J.; et al. Published criteria for evaluating health-related Web sites: Review. *British Medical Journal* 318:647-649, 1999.

27. Freimuth, V.S. The Chronically Uninformed: Closing the Knowledge Gap in Health. In: Ray, E.B., and Donohew, L. *Communication and Health: Systems and Applications*. Hillsdale, NJ: Lawrence Erlbaum Associates, 1990.

28. U.S. Department of Commerce. *Falling Through the Net: Defining the Digital Divide*. Washington, DC: National Telecommunications and Information Administration, 1999. Retrieved July 29, 1999.

<www.ntia.doc.gov/ntiahome/digitaldivide/>

29. Eng, T.R.; Maxfield, A.; Patrick, K.; et al. Access to health information and support: A public highway or a private road? *Journal of the American Medical Association* 280:1371-1375, 1998.

30. American Medical Association, Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs. Health literacy: Report of the Council on Scientific Affairs. *Journal of the American Medical Association* 281:552-557, 1998.

31. Baker, D.W.; Parker, R.M.; Williams, M.V.; et al. The relationship of patient reading ability to self-reported health and use of health services. *American Journal of Public Health* 87:1027-1030, 1997.

32. Weiss, B.D.; Blanchard, J.S.; McGee, D.L.; et al. Illiteracy among Medicaid recipients and its relationship to health care costs. *Journal of Health Care for the Poor and Under served* 5:99-111, 1994.

33. Davis, T.C.; Meldrum, H.; Tippy, P.K.P.; et al. How poor literacy leads to poor healthcare. *Patient Care* 94-108, October 15, 1996.

34. Williams, M.V.; Baker, D.W.; Parker, R.M.; et al. Relationship of functional health literacy to patients' knowledge of their chronic disease. A study of patients with hypertension and diabetes. *Archives of Internal Medicine* 158:166-172, 1998.

35. Williams, M.V.; Baker, D.W.; Honig, E.G.; et al. Inadequate literacy is a barrier to asthma knowledge and self-care. *Chest* 114:1008-1015, 1998.

36. Kirsch, I.; Jungeblut, A.; Jenkins, L.; et al. Adult Literacy in America: A First Look at the Findings of the National Adult Literacy Survey. Washington, DC: National Center for Education Statistics, U.S. Department of Education, 1993.

37. Gazmararian, J.A.; Baker, D.W.; Williams, M.V.; et al. Health literacy among Medicare enrollees in a managed care organization. *Journal of the American Medical Association* 281:545-551, 1999.

38. Williams, M.V.; Parker, R.M.; Baker, D.W.; et al. Inadequate functional health literacy among patients at two public hospitals. *Journal of the American Medical Association* 274:1677-1682, 1995.

39. National Cancer Institute. *Clear & Simple: Developing Effective Print Materials for Low-literate Readers*. Pub. No. NIH 95-3594. Washington, DC: U.S. Department of Health and Human Services, 1995.

40. Doak, C.C.; Doak, L.G.; and Root, J.H. *Teaching Patients with Low Literacy Skills*, 2nd ed. Philadelphia: J.B. Lippincott Company, 1996.

41. Rossi, P.H. Twelve Laws of Evaluation Research. In: Fisher, A.; Pavlova, M.; and Covello, V. (eds.). *Evaluation and Effective Risk Communications, Workshop Proceedings*. Interagency Task Force on Environmental Cancer and Heart and Lung Disease, Committee on Public Education and Communication. EPA/600/9-90/054. Washington, DC: U.S. Environmental Protection Agency (EPA), 1991.

42. Rossi, P.H., and Freeman, H.E. *Evaluation: A Systematic Approach*, 5th ed. Newbury Park, CA: Sage Publications, 1993.

43. ReutersHealth. Americans seek health information on-line. Retrieved August 6, 1999. <www.reutershealth.Com>

44. American Telemedicine Association. American Telemedicine Association issues advisory on use of medical Web sites. Retrieved August 10, 1999 www.atmeda.org

45. U.S. Federal Trade Commission. "Operation Cure All" targets Internet health fraud. Press release, June 24, 1999. Washington, DC.

46. Rosenberg, E.E.; Lussier, M.T.; and Beaudoin, C. Lessons for clinicians from physician-patient communication literature. *Archives of Family Medicine* 6:279-283, 1997.

47. Laine, C.; Davidoff, F.; Lewis, C.E.; et al. Important elements of outpatient care: a comparison of patients' and physicians' opinions. *Annals of Internal Medicine* 125:640-645, 1996.

48. Ong, L.M.L.; de Haes, J.C.J.M.; Hoos, A.M.; et al. Doctor-patient communication: A review of the literature. *Social Science and Medicine* 40:903-918, 1995.

49. Ratzan, S.C., ed. Health communication, challenges for the 21st century. Special issue. *American Behavioral Scientist* 38(2), 1994.

50. Green, L.W., and Kreuter, M.W. *Health Promotion Planning, an Educational and Ecological Approach*, 3rd ed. Mountain View, CA: Mayfield Publishing Company, 1999.

51. U.S. Congress. National Literacy Act of 1991. Public Law 102-73, 1991.

52. Shortliffe, E.H., and Perreault, L.E., eds. *Medical Informatics*. New York: Addison-Wesley, 1990.

53. Lefebvre, R.C., and Rochlin, L. Social Marketing. In: Glanz, K.; Lewis, F.M.; and Rimer, B.K. *Health Behavior and Health Education: Theory, Research, and Practice*. 2nd ed. San Francisco: Jossey-Bass Publishers, 1997, 384-401.

54. Ling, J.C.; Franklin, B.A.; Lindsteadt, J.F.; et al. Social Marketing, Its Place in Public Health. *Annual Reviews of Public Health* 13:341-62, 1992.

12

Heart Disease and Stroke

Co-Lead Agencies: Centers for Disease Control and Prevention;
National Institutes of Health

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Goal

Improve cardiovascular health and quality of life through the prevention, detection, and treatment of risk factors; early identification and treatment of heart attacks and strokes; and prevention of recurrent cardiovascular events.

Overview

Heart disease is the leading cause of death for all Americans. Stroke is the third leading cause of death. Heart disease and stroke continue to be a major cause of disability and a significant contributor to increases in health care costs in the United States.[1]

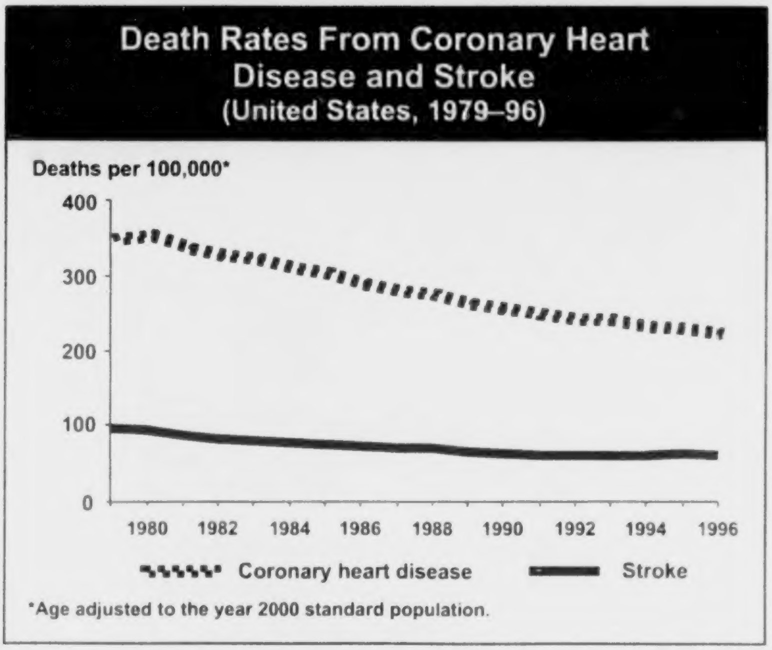
Epidemiologic and statistical studies have identified a number of factors that increase the risk of heart disease and stroke. In addition, clinical trials and prevention research studies have demonstrated effective strategies to prevent and control these risk factors and thereby reduce illnesses, disabilities, and deaths caused by heart disease and stroke.

Issues and Trends

Coronary heart disease (CHD) accounts for the largest proportion of heart disease. About 12 million Americans have CHD.[1] The CHD death rate peaked in the mid-1960s and has declined in the general population over the past 35 years. This decline began in females in the 1950s and in males in the 1960s. Although absolute declines (reduction in the total number of cases) have been much greater in males than in females, rates of decline (the speed at which the number of cases had decreased) also have been greater in males, but in recent years they have been greater in females.

Since 1950, there has been a clear rise and fall in CHD death rates for each racial and gender group. Although the age-adjusted death rate for CHD continues to decline each year, declines in the unadjusted death rate and in the number of deaths have slowed because of an increase in the number of older Americans, who have higher rates of CHD.

High blood cholesterol is a major risk factor for CHD that can be modified. More than 50 million American adults have blood cholesterol levels that require medical advice and treatment.[2] More than 90 million adults have cholesterol levels that are higher than desirable. All adults aged 20 years and older should have their cholesterol levels checked at least once every 5 years to help them take action to prevent or lower their risk of CHD.[3] Lifestyle changes that prevent or lower high blood cholesterol include eating a diet low in saturated fat and cholesterol, increasing physical activity, and reducing excess weight.[3]


Death Rates From Coronary Heart Disease and Stroke (United States, 1979–96)

*Age adjusted to the year 2000 standard population.

Source: National Vital Statistics System (NVSS), CDC, NCHS, 1979–96.

About 4 million persons have cerebrovascular disease,[1] a major form of which is stroke. About 600,000 strokes occur each year in the United States, resulting in about 158,000 deaths. Death rates for stroke are highest in the southeastern United States. Like CHD death rates, stroke death rates have declined over the past 30 years. The decline accelerated in the 1970s for whites and African Americans. The rate of decline, however, has slowed in recent years. The overall decline has occurred mainly because of improvements in the detection and treatment-of-high blood pressure (hypertension).

High blood pressure is known as the "silent killer" and remains a major risk factor for CHD, stroke, and heart failure. About 50 million adult Americans have high blood pressure. High blood pressure also is more common in older persons. Comparing the 1976–80 National Health and Nutrition Examination Survey (NHANES II) and the 1988–91 survey (NHANES III, phase 1) reveals an increase from 51 to 73 percent in the proportion of Americans who were aware that they had high blood pressure.[4,5] Nevertheless, a large proportion of Americans with high blood pressure still are unaware that they have this disorder.[4,5]

The age composition of the U.S. population has changed dramatically during the 20th century and will continue to change during the 21st century. By the end of the 1990s, one in every four persons was aged 50 years or older. By 2030, about one in three will be aged 50 years or older. Most significant has been the increase in the size of the population aged 65 years and older. In addition, the percentage of persons aged 85 years and older has increased significantly. Heart disease and stroke deaths rise significantly after age 65 years, accounting for more than 40 percent of all deaths among persons aged 65 to 74 years and almost 60 percent of those aged 85 years and older. In the 1980s and 1990s, heart failure emerged as a major chronic disease for older adults.[6, 7, 8, 9] Almost 75 percent of the nearly 5 million patients with heart failure in the United States are older than 65 years.[8] Hospitalization rates for heart failure continue to increase significantly in those aged 65 years and older.[9]

Atrial fibrillation (AF) affects close to 2 million people. The number of existing cases of AF increases with age and is more common in males than in females.[1] The rate of AF is 0.5 percent for the group aged 50 to 59 years and rises to 8.8 percent in the group aged 80 to 89 years.[9] Because females have a longer life expectancy than males, the actual number of cases in elderly females (older than 75 years) is greater than in elderly males. Cases of AF may continue to rise as persons live longer and as more persons survive a first heart attack.

Because national data systems will not be available in the first half of the decade for tracking progress, two subjects of interest are not addressed in this focus area's objectives. Representing a research and data collection agenda for the coming decade, the topics are related to provider counseling and increasing awareness of cardiovascular disease (CVD) as the leading cause of death for all females. The first topic covers instruction of high-risk patients and family members or significant others in preparing appropriate heart attack and stroke action plans for seeking rapid emergency care, including when to call 911 or the local emergency number. The second topic deals with increasing awareness among all females that CVD is their leading cause of death.

Disparities

In general, the heart disease death rate has been consistently higher in males than in females and higher in the African American population than in the white population. In addition, over the past 30 years the CHD death rate has declined differentially by gender and race. In the 1970s, African American females experienced the greatest decline in CHD. This steep decline disappeared in the 1980s, when rates of decline for white males and females exceeded those for African American males and females, and African American females had the lowest rate of decline.[10] In the 1980s, males had a steeper rate of decline than females. Between 1980 and 1995, the percentage declines were greater in males than in females and greater in whites than in African Americans. In 1995, the age-adjusted death rate for heart disease was 42 percent higher in African American males than in white males, 65 percent higher in African American females than in white females, and almost twice as high in males as in females.

Disparities also exist in treatment outcomes for patients who have a heart attack. Females, in general, have poorer outcomes following a heart attack than do males: 44 percent of females who have a heart attack die within a year, compared with 27 percent of males. At older ages, females who have heart attacks are twice as likely as males to die within a few weeks.[11] These differences are explained, in part, by the presence of coexisting conditions, such as high blood pressure, diabetes, and congestive heart failure. After controlling for such factors, however, studies indicate an association remains between female gender and death following a heart attack. Complications are more frequent in females than in males after coronary intervention procedures, such as angioplasty or bypass surgery, are performed. Additional studies are needed to evaluate specific interventions and determine whether gender-specific interventions may be beneficial. In general, factors such as age (older), gender (female), race or ethnicity, low socioeconomic status, and prior medical conditions (previous heart attack, history of angina or diabetes) have been associated with longer prehospital delays in seeking care for symptoms of a heart attack.[12]

The male-female disparity in stroke deaths widened until the 1980s and then narrowed. Although stroke death rates have been decreasing, the decline among African Americans has not been as substantial as the decline in the total population. The racial differences in the number of new cases of stroke and deaths due to stroke are even greater than those found in CHD. Stroke deaths are highest in African American females born before 1950 and in African American males born after 1950. Among the racial and gender groups, declines in the stroke death rate are smallest in African American males. When adjusted for age, stroke deaths are almost 80 percent higher in African Americans than in whites and about 17 percent higher in males than in females. Moreover, age-specific stroke deaths are higher in African Americans than in whites in all age groups up to age 84 years and higher in males than in females throughout all adult age groups.

The number of existing cases of high blood pressure is nearly 40 percent higher in African Americans than in whites (an estimated 6.4 million African Americans have high blood pressure),[1] and its effects are more frequent and severe in the African American population.

Opportunities

Primary prevention. Heart disease and stroke share several risk factors, including high blood pressure, cigarette smoking, high blood cholesterol, and overweight. Physical inactivity and diabetes are additional risk factors for heart disease. (See Focus Area 5. Diabetes.) The lifetime risk for developing CHD is very high in the United States: one of every two males and one of every three females aged 40 years and under will develop CHD sometime in their life. Primary prevention, specifically through lifestyle interventions which promote heart-healthy behaviors, is a major strategy to reduce the development of heart disease or stroke.

A number of studies have shown that lifestyle interventions can help prevent high blood pressure and reduce blood cholesterol levels. For high blood pressure, these changes include increasing the level of aerobic physical activity, maintaining a healthy weight, limiting the consumption of alcohol to moderate levels for those who drink, reducing salt and sodium intake, and eating a reduced fat diet high in fruits, vegetables, and low-fat dairy food. Moreover, studies show that a diet low in total fat, saturated fat, and dietary cholesterol—with physical activity and weight control—can lower blood cholesterol levels.

Overweight and obesity are growing public health problems, affecting adults, adolescents, and children. Some 97 million adults are obese or overweight and thus are at increased risk of illness from high blood pressure, high blood cholesterol and other lipid disorders, type 2 diabetes, CHD, stroke, and other diseases. Efforts to prevent overweight and obesity by promoting heart-healthy behaviors—beginning in childhood—are needed to help reverse the trend. Balancing calorie intake with physical activity is critical. Research in the 1990s showed that a wide range of physical activities are beneficial to health and that everyone can benefit from physical activity. Even when physical activity is less than vigorous, it can still produce health benefits, including a decreased risk of CHD.[14, 15, 16, 17]

Nonetheless, increasing the level of physical activity remains a challenge. Furthermore, according to the 1996 *Surgeon General's Report on Physical Activity and Health*,[18] the percentage of people who say they engage in no leisure-time physical activity is higher among females than males, among African Americans and Hispanics than whites, among older adults than younger adults, and among the less affluent than the more affluent persons.

Progress on smoking cessation will play a critical role in achieving the national goal for heart disease reduction. Smoking cessation has major and immediate health benefits for men and women of all ages. For example, people who quit smoking before aged 50 years have half the risk of dying in the next 15 years, compared with continuing smokers.[19]

Studies have shown that risk factors for heart disease and stroke develop early in life: atherosclerosis already is present in late adolescence, diabetes in overweight children is on the rise, and hypertension can begin in the early teens.[20, 21] Tobacco use also begins in adolescence, therefore, primary prevention efforts should be expanded in elementary and secondary schools and at the college level. Nationwide mass media campaigns, community-based programs, and other communication efforts should be expanded to give groups better access to information and programs. These programs should promote heart-healthy behaviors at the community level as well as detect and treat existing risk factors.

Risk factor detection and treatment. Screening for risk factors, particularly for high blood pressure and high blood cholesterol, is an important step in identifying individuals whose risk factors may be undiagnosed and to refer them to ongoing care. A host of studies have shown that dietary and pharmacologic therapy can reduce CHD and stroke risk factors, especially high blood pressure and high blood cholesterol. These interventions, coupled with other lifestyle changes, such as stopping smoking, increasing physical activity, and maintaining a healthy weight, can be even more effective in lowering the risk of a heart attack or stroke.[22, 23, 24, 25]

Research showing the importance of blood pressure for health led to the introduction by the National Heart, Lung, and Blood Institute (NHLBI) of the National High Blood Pressure Education Program (NHBPEP) in 1972.[26] NHBPEP is the first large-scale public outreach and education campaign to reduce high blood pressure. Its promotion of the detection, treatment, and control of high blood pressure has been credited with influencing the dramatic increase in the public's understanding of hypertension and its role in heart attacks and strokes, as well as related declines in deaths. The percentage of people who were able to control their high blood pressure through lifestyle changes and through antihypertensive drug therapy rose from about 16 percent in 1971–72 to about 65 percent in 1988–94.[1, 6] About 90 percent of all adults now have their blood pressure measured at least once every 2 years. Average blood pressure levels have fallen by 10 to 12 mmHg since the advent of NHBPEP.[27] A slowly changing issue has been the recognition of systolic blood pressure as a more important predictor of CHD than diastolic blood pressure, especially in older adults.[28, 29]

Research reported in the 1980s showed for the first time that lowering high blood cholesterol significantly reduces the risk for heart attacks and heart attack deaths. This research led to the creation of the National Cholesterol Education Program (NCEP) in 1985.[30] Clinical trials have proved that lowering cholesterol in persons with and without existing CHD reduces illness and death from CHD and even reduces overall death rates. Since NCEP was launched, the percentage of persons who have had their cholesterol checked has more than doubled, from 35 percent in 1983 to 75 percent in 1995.[31] Consumption of saturated fat, total fat, and cholesterol declined during the 1980s and 1990s, average blood cholesterol levels in adults dropped from 213 mg/dL in 1978 to 203 mg/dL in 1988–94, and the prevalence of high blood cholesterol requiring medical advice and treatment fell from 36 percent to 29 percent.[30] These results reflect the impact of NCEP's population and high-risk strategies for lowering cholesterol.

The NHLBI Obesity Education Initiative, in cooperation with the National Institute of Diabetes and Digestive and Kidney Diseases, released in 1998 the first Federal guidelines on the identification, evaluation, and treatment of overweight and obesity in adults.[32] These clinical practice guidelines are designed to help physicians in their identification and treatment of overweight and obesity, a growing public health problem. Persons who are overweight or obese are at increased risk of illness from high blood pressure, lipid disorders, type 2 diabetes, CHD, stroke, gallbladder disease, osteoarthritis, sleep apnea and other respiratory problems, and certain cancers. The total cost attributable to obesity-related diseases in the United States is nearly $100 billion annually. The guidelines present a new approach to the assessment of overweight and obesity and establish principles of safe and effective weight loss. According to the guidelines, the assessment of overweight involves three key measures—body mass index (BMI), waist circumference, and risk factors for diseases and conditions associated with obesity. The definitions in the guidelines are based on research that relates body mass index to the risk of death and illness, with overweight defined as a BMI of 25 to 29.9 and obesity as a BMI of 30 and above.[32]

As BMI levels rise, the average blood pressure and total cholesterol levels increase, and average HDL (good cholesterol) levels decrease. Males in the highest obesity category have more than twice the risk of high blood pressure, high blood cholesterol, or both, compared to males of normal weight. Females in the highest obesity category have four times the risk of either or both of these risk factors, compared to normal weight females. Therefore, the guidelines recommend weight loss to reduce high total cholesterol, raise low levels of HDL, reduce high blood pressure, and reduce elevated blood glucose in overweight persons who have two or more risk factors and in obese persons. Overweight persons without other risk factors are advised to prevent further weight gain.

The Agency for Healthcare Research and Quality's evidence-based guideline on smoking cessation interventions clearly shows that a variety of interventions are effective and concludes that improvements in cessation will require active participation of health care systems.[33]

These national education efforts have changed the way people think about their health. More persons than ever are having their blood pressure and their cholesterol levels checked and are taking action to keep them under control. Persons are aware of preventive measures and health promotion behaviors that can reduce their risk of developing CHD- and stroke-related illnesses. In addition, improved pharmacologic therapies are available to treat and control major CHD risk factors, such as high blood pressure, high blood cholesterol, and obesity. These therapies however, may be underutilized by health care providers.

Early identification and treatment. Each year in the United States, about 1.1 million persons experience a heart attack (myocardial infarction). In 1996, 476,000 persons died from heart attacks—about 51 percent were males and 49 percent were females. More than half of these deaths occurred suddenly, within 1 hour of symptom onset outside the hospital.[1, 34] For those patients who survive, delay in treatment can mean increased damage to the heart muscle and poorer outcomes.

The benefits of rapid identification and treatment of heart attacks are clear. Early treatment of heart attack patients reduces heart-muscle damage, improves heart muscle function, and lowers the heart attack death rate.[35, 36]

Controlled trials of clot-dissolving (thrombolytic) agents used during the acute phase of a heart attack have demonstrated the benefits of opening the affected coronary artery and reestablishing blood flow. The results from these trials have been incorporated into the current treatment model for early intervention during the acute phase of a heart attack.[35] Patients who receive clot-dissolving agents in the first and second hours after the onset of heart attack symptoms experience significant reductions in disability and death when compared to patients who are treated in the third to sixth hours.[37] Even patients who are treated between 6 and 12 hours after the onset of symptoms show modest but significant benefits when compared to patients whose treatment is delayed more than 12 hours.[38] Other acute interventions for heart attack patients include balloon angioplasty, coronary stenting, and coronary artery bypass surgery.[36, 39] The importance of early treatment has generated a growing interest in detecting the earliest warning, or "prodromal," symptoms of a heart attack, thus providing the lead time needed to treat heart attack patients as quickly and effectively as possible.[40]

As with heart attacks, deaths from stroke can be reduced or delayed by preventing and controlling risk factors and using the most effective therapies in a timely manner. Functional limitations can be minimized when patients are treated with clot-dissolving therapy within 3 hours of a thrombotic stroke.[41] As therapies have become increasingly more effective, delays in treatment initiation and lack of implementation of therapies pose major barriers to improving outcomes. Thus far, efforts to provide appropriate access to timely and optimal care to patients with acute coronary syndromes and thrombotic stroke generally are not organized into a unified, cohesive system in communities across the United States.[42]

Early access to emergency health care services is also a critical determinant of outcome for victims of out-of-hospital cardiac arrest. For out-of-hospital cardiac arrest where bystanders are present, a key factor is minimizing the time from the moment the collapse is recognized to the delivery of a short burst of electrical current. Collapse recognition occurs when a bystander notices that the affected individual is unresponsive, has slowed or stopped breathing, or lacks a detectable pulse.[42] As soon as the emergency is recognized, the bystander should call 911 or the local emergency number. Cardiopulmonary resuscitation (CPR) is critical and should begin immediately. The sooner CPR is given to a person in cardiac arrest or ventilation is given for respiratory arrest, the greater the chances of survival.[43]

Despite evidence that effective treatment depends on rapid response to the patient, only a minority of individuals who can benefit from defibrillatory shock or thrombolytic agents are treated early enough for them to work.[44] The public health challenge is to develop and maintain programs for easier identification and treatment of individuals with acute myocardinal infarction (AMI) and out-of-hospital cardiac arrest.

Counseling by health care providers could help to increase awareness of the symptoms and signs of a heart attack or stroke and the appropriate actions to take, such as accessing emergency medical services. It also can help reduce and control factors that increase the risk of a heart attack or a stroke. To focus resources where they might derive the greatest benefit, education should be, at a minimum, aimed at reducing delays in seeking treatment for those individuals who are at high risk for a future cardiovascular events—for example, those with existing CHD and multiple CHD risk factors.

Cardiovascular disease recurrence. Patients with CHD, atherosclerotic disease of the aorta or peripheral arteries, or carotid artery disease are at high risk for heart attack and CHD death.[45, 46] About 50 percent of all heart attacks and at least 70 percent of CHD deaths occur in individuals with prior symptoms of CVD.[47, 48] The risk for heart attack and death among persons with established CHD (or other atherosclerotic disease) is five to seven times higher than among the general population.[5]

Risk factor control can greatly reduce the risk of subsequent cardiovascular problems in patients with CHD. For example, clinical trials have proved that lowering LDL-cholesterol levels in CHD patients dramatically reduces heart attacks, CHD and CVD deaths, and total deaths.[49, 50, 51] Clinical trials have also demonstrated that lowering blood pressure in such patients reduces CVD endpoints and deaths from all causes.[52, 53, 54] Adequate control of risk factors in the 12 million adults with CHD could reduce the overall rate of heart attacks and CHD deaths in the United States by over 20 percent. Many CHD patients, however, are not getting the aggressive risk factor management they need.

Clinical trials also show that therapeutic interventions can relieve symptoms, reduce deaths, reduce the number of rehospitalizations, and improve the quality of life for older adults with heart failure. Despite the development and promotion of clinical practice guidelines, physicians are continuing to underutilize recommended therapies. As the number of older adults who experience heart failure rises (expected to double by about 2040), these guidelines will need to be incorporated into clinical practice.

Adherence and compliance. There currently exist a number of well-established recommendations for preventing and treating cardiovascular disease and its associated risk factors. However, the potential benefits to be gained from applying these science-based recommendations often are not realized because of the multiple factors involved in adherence to such recommendations. The ability or willingness of the patient to carry out a treatment program successfully is of critical importance. Experience with the long-term management of asymptomatic CHD risk factors, such as hypertension, indicates that a sizable number of patients do not successfully carry out their prescribed treatment regimen. The reasons vary: the patient may choose not to have the initial prescription filled, may successfully initiate therapy only to abandon it after a few weeks or months, or may comply with only part of the regimen and thus fail to achieve optimal control. Continued efforts are needed to better understand the determinants of adherence to ensure that patients stay with their prescribed therapy. Also, health care providers and the health care systems in which they work are critical factors in determining whether established interventions are prescribed and patients adequately educated and monitored for therapeutic response. Finally, support from the patient's community

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and greater use of technology such as the Internet also have an increasingly greater role in promoting long-term adherence to lifestyle and pharmacologic regimens. Achieving long-term control of CHD risk factors requires that the same interest and attention given to initial evaluation and treatment decisions also be given to long-term management issues.

Future efforts. Population studies and public outreach are two of the most important areas of future research. Advanced technology allows researchers to screen persons noninvasively and painlessly for signs of developing atherosclerosis. Eventually, when their role in medical practice has been better delineated, noninvasive methods (such as magnetic resonance imaging, ultrasound, and others) may be used to determine the number of persons in the population who have heart disease or are at risk of developing heart disease.

Many people know what a desirable cholesterol level is, what their blood pressure should be, and that these factors relate to a risk of heart disease and stroke. The average person can expect to live 5½ years longer today than he or she did 30 years ago and nearly 4 years of that gain in life expectancy can be attributed to progress against CVD, including CHD and stroke. However, much remains to be done to ensure that all segments of the population share in these benefits. Although national health data on African Americans and Hispanics have been collected since the early 1980s, data on heart disease and stroke risk factors are sparse for other minority groups, including American Indians, Alaska Natives, Native Hawaiians, Asians, and Pacific Islanders. Adequate national data on all these populations will enable researchers to examine racial and ethnic differences more fully.

Public outreach and community health intervention efforts, such as those that encourage persons to lower their high blood pressure or to get their cholesterol checked or to help people stop smoking, are important parts of health care in the United States. Culturally and linguistically appropriate counseling by health care providers is important to those efforts. New coalitions between health care providers and individual communities are forming to focus on the prevention and management of chronic CVD throughout all stages of life. Emerging areas of research include the effect of socioeconomic status on health and access to care; health status in rural populations, which often have low income and education levels; and quality of life as a criterion for evaluating treatment. With the knowledge gained through these efforts, communities will be able to use well-tested health promotion, disease prevention, and early management strategies to lower their costs and begin to extend the benefits of improved health to all Americans.[55]

Interim Progress Toward Year 2000 Objectives

Extensive progress has been made in reducing deaths from and risk factors for heart disease and stroke, but significant challenges remain. Between 1987 and 1996, the age-adjusted death rate for CHD declined by 22.2 percent, and for stroke, it declined by 13.2 percent. Despite these achievements, the Healthy People 2000 objectives on CHD and stroke did not reach the year 2000 targets, and the disparities between African Americans and whites were not reduced.

However, progress occurred in reducing high blood cholesterol and controlling high blood pressure. Average total cholesterol declined from 213 mg/dL in 1976–80 to 203 mg/dL in 1988–94, and the prevalence of high blood cholesterol declined from 26 percent to 19 percent, thereby achieving the year 2000 target. In the same time period, control rates among persons who have high blood pressure increased from 11 to 29 percent. However, levels fell short of year 2000 targets. The age-adjusted prevalence of overweight or obesity increased from 26 percent in 1976–80 to 35 percent in 1988–94. The percentage of the population who engaged in light to moderate physical activity remained stable at around 22 percent between 1985 and 1995. Caloric intake from fat as a percentage of total calories consumed declined from 36 percent in 1976–80 to 34 percent in 1988–94, but fell short of the target of 30 percent. Smoking among adults declined steadily from the mid-1960s through the late 1980s, and has leveled off in the 1990s. In 1998, median adult smoking prevalence for all 50 States and the District of Columbia was 22.9 percent—25.3 percent for men and 21.0 percent for women.[45]

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics. *Healthy People 2000 Review, 1998-99.*

Healthy People 2010—Summary of Objectives

Heart Disease and Stroke

Goal: Improve cardiovascular health and quality of life through the prevention, detection, and treatment of risk factors; early identification and treatment of heart attacks and strokes; and prevention of recurrent cardiovascular events.

Number	Objective
Heart Disease	
12-1	Coronary heart disease (CHD) deaths
12-2	Knowledge of symptoms of heart attack and importance of dialing 911
12-3	Artery-opening therapy
12-4	Bystander response to cardiac arrest
12-5	Out-of-hospital emergency care
12-6	Heart failure hospitalizations
Stroke	
12-7	Stroke deaths
12-8	Knowledge of early warning symptoms of stroke
Blood Pressure	
12-9	High blood pressure
12-10	High blood pressure control
12-11	Action to help control blood pressure
12-12	Blood pressure monitoring
Cholesterol	
12-13	Mean total blood cholesterol levels
12-14	High blood cholesterol levels
12-15	Blood cholesterol screening
12-16	LDL-cholesterol level in CHD patients

Heart Disease

12-1. Reduce coronary heart disease deaths.

Target: 166 deaths per 100,000 population.

Baseline: 208 coronary heart disease deaths per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: 20 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Coronary Heart Disease Deaths** Rate per 100,000
TOTAL	216
Race and ethnicity	
American Indian or Alaska Native	134
Asian or Pacific Islander	125
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	257
White	214
Hispanic or Latino	151
Not Hispanic or Latino	219
Black or African American	262
White	216
Gender	
Female	170
Male	276
Education level (aged 25 to 64 years)	
Less than high school	95
High school graduate	84
At least some college	40

Total Population, 1997*	Coronary Heart Disease Deaths
	Rate per 100,000
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

12-2. (Developmental) Increase the proportion of adults aged 20 years and older who are aware of the early warning symptoms and signs of a heart attack and the importance of accessing rapid emergency care by calling 911.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

12-3. (Developmental) Increase the proportion of eligible patients with heart attacks who receive artery-opening therapy within an hour of symptom onset.

Potential data source: National Registry of Myocardial Infarction, National Acute Myocardial Infarction Project, HCFA.

12-4. (Developmental) Increase the proportion of adults aged 20 years and older who call 911 and administer cardiopulmonary resuscitation (CPR) when they witness an out-of-hospital cardiac arrest.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

12-5. (Developmental) Increase the proportion of persons with witnessed out-of-hospital cardiac arrest who are eligible and receive their first therapeutic electrical shock within 6 minutes after collapse recognition.

Potential data sources: National Health Interview Survey (NHIS), CDC, NCHS; Medical Expenditure Panel Survey (MEPS), AHCPR and CDC.

12-6. Reduce hospitalizations of older adults with heart failure as the principal diagnosis.

Target and baseline:

Objective	Hospitalizations of Older Adults With Heart Failure as the Principal Diagnosis	1997 Baseline	2010 Target
		Per 1,000 Population	
12-6a.	65 to 74 years	13.4	6.5
12-6b.	75 to 84 years	26.9	13.5
12-6c.	85 years and older	53.1	26.5

Target setting method: Better than the best.

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

Adults With Heart Failure as Principal Diagnosis, 1997	Heart Failure Hospitalization		
	12-6a. Aged 65 to 74 Years	**12-6b.** Aged 75 to 84 Years	**12-6c.** Aged 85 Years and Older
	Rate per 1,000		
TOTAL	13.4	26.9	53.1
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	20.0	21.9	47.6
White	10.1	21.6	42.1
Hispanic or Latino	DSU	DSU	DSU
Not Hispanic or Latino	DSU	DSU	DSU
Black or African American	DSU	DSU	DSU
White	DSU	DSU	DSU
Gender			
Female	11.5	25.2	50.6
Male	15.6	29.5	59.3

Adults With Heart Failure as Principal Diagnosis, 1997	Heart Failure Hospitalization 12-6a. Aged 65 to 74 Years	12-6b. Aged 75 to 84 Years Rate per 1,000	12-6c. Aged 85 Years and Older
Education level			
Less than high school	DNC	DNC	DNC
High school graduate	DNC	DNC	DNC
At least some college	DNC	DNC	DNC
Disability status			
People with disabilities	DNC	DNC	DNC
People without disabilities	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Stroke

12-7. Reduce stroke deaths.

Target: 48 deaths per 100,000 population.

Baseline: 60 deaths from stroke per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: 20 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	Stroke Deaths Rate per 100,000
TOTAL	62
Race and ethnicity	
American Indian or Alaska Native	39
Asian or Pacific Islander	55
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	82
White	60
Hispanic or Latino	40
Not Hispanic or Latino	63

Total Population, 1997*	**Stroke Deaths** Rate per 100,000
Black or African American	84
White	60
Gender	
Female	60
Male	64
Education level (aged 25 to 64 years)	
Less than high school	22
High school graduate	17
At least some college	8
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

12-8. (Developmental) Increase the proportion of adults who are aware of the early warning symptoms and signs of a stroke.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

Blood Pressure

12-9. Reduce the proportion of adults with high blood pressure.

Target: 16 percent.

Baseline: 28 percent of adults aged 20 years and older had high blood pressure in 1988-94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 20 Years and Older, 1988–94 (unless noted)	High Blood Pressure Percent
TOTAL	28
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	40
White	27
Hispanic or Latino	DNC
Mexican American	29
Not Hispanic or Latino	DNA
Black or African American	40
White	27
Gender	
Female	26
Male	30
Family income level	
Poor	32
Near poor	30
Middle/high income	27
Disability status	
Persons with disabilities	32 (1991-94)
Persons without disabilities	27 (1991-94)
Select populations	
Persons with diabetes	DNA
Persons without diabetes	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

12-10. Increase the proportion of adults with high blood pressure whose blood pressure is under control.

Target: 50 percent.

Baseline: 18 percent of adults aged 18 years and older with high blood pressure had it under control in 1988-94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 18 Years and Older With High Blood Pressure, 1988-91* (unless noted)	Blood Pressure Controlled Percent
TOTAL	18
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	19
White	18
Hispanic or Latino	DNC
Mexican American	12
Not Hispanic or Latino	DNA
Black or African American	19
White	18
Gender	
Female	28
Male	12
Family income level	
Poor	24
Near poor	20
Middle/high income	16
Disability status	
Persons with disabilities	20 (1991-94)
Persons without disabilities	18 (1991-94)

Adults Aged 18 Years and Older With High Blood Pressure, 1988-91* (unless noted)	Blood Pressure Controlled Percent
Select populations	
Persons with diabetes	DNA
Persons without diabetes	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

12-11. Increase the proportion of adults with high blood pressure who are taking action (for example, losing weight, increasing physical activity, and reducing sodium intake) to help control their blood pressure.

Target: 95 percent.

Baseline: 72 percent of adults aged 18 years and older with high blood pressure were taking action to control it in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older With High Blood Pressure, 1994*	Taking Action To Control Blood Pressure Percent
TOTAL	79
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	84
White	78
Hispanic or Latino	79
Not Hispanic or Latino	79
Black or African American	84
White	78

Adults Aged 18 Years and Older With High Blood Pressure, 1994*	Taking Action To Control Blood Pressure Percent
Gender	
Female	81
Male	77
Family income level	
Poor	78
Near poor	80
Middle/high income	79
Disability status	
Persons with activity limitations	84
Persons without activity limitations	76
Geographic variation	
Urban	80
Rural	78
Select populations	
Persons with diabetes	DNA
Persons without diabetes	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Crude rates. Data not currently age adjusted.

*New data for population groups will be added when available.

12-12. Increase the proportion of adults who have had their blood pressure measured within the preceding 2 years and can state whether their blood pressure was normal or high.

Target: 95 percent.

Baseline: 90 percent of adults aged 18 years and older had their blood pressure measured in the past 2 years and could state whether it was high or low in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1994*	Had Blood Pressure Measured in Past 2 Years and Knew Whether It Was Normal or High Percent
TOTAL	85
Race and ethnicity	
American Indian or Alaska Native	85
Asian or Pacific Islander	80
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	88
White	85
Hispanic or Latino	80
Not Hispanic or Latino	86
Black or African American	88
White	86
Gender	
Female	89
Male	81
Education level (aged 25 years and older)	
Less than high school	80
High school graduate	85
At least some college	88
Disability status	
Persons with activity limitations	90
Persons without activity limitations	84

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Cholesterol

12-13. Reduce the mean total blood cholesterol levels among adults.

Target: 199 mg/dL.

Baseline: 206 mg/dL was the mean total blood cholesterol level for adults aged 20 years and older in 1988–94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 20 Years and Older, 1988–94 (unless noted)	**Cholesterol Level** mg/dL
TOTAL	206
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	204
White	206
Hispanic or Latino	DNC
Mexican American	205
Not Hispanic or Latino	DNA
Black or African American	204
White	206
Gender	
Female	207
Male	204
Family income level	
Poor	205
Near poor	204
Middle/high income	206

Adults Aged 20 Years and Older, 1988–94 (unless noted)	Cholesterol Level mg/dL
Disability status	
Persons with disabilities	208 (1991-94)
Persons without disabilities	204 (1991-94)

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.

12-14. Reduce the proportion of adults with high total blood cholesterol levels.

Target: 17 percent.

Baseline: 21 percent of adults aged 20 years and older had total blood cholesterol levels of 240 mg/dL or greater in 1988–94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 20 Years and Older, 1988–94 (unless noted)	Cholesterol, 240 mg/dL or Greater Percent
TOTAL	21
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	19
White	21
Hispanic or Latino	DNC
Mexican American	18
Not Hispanic or Latino	DNA
Black or African American	19
White	21

Adults Aged 20 Years and Older, 1988–94 (unless noted)	Cholesterol, 240 mg/dL or Greater Percent
Gender	
Female	22
Male	19
Education level	
Less than high school	22
High school graduate	22
At least some college	19
Disability status	
Persons with disabilities	24 (1991-94)
Persons without disabilities	19 (1991-94)

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

12-15. Increase the proportion of adults who have had their blood cholesterol checked within the preceding 5 years.

Target: 80 percent.

Baseline: 68 percent of adults aged 18 years and older had their blood cholesterol checked within the preceding 5 years in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1993*	Cholesterol Checked in Past 5 Years Percent
TOTAL	67
Race and ethnicity	
American Indian or Alaska Native	57
Asian or Pacific Islander	58
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	66
White	67

Adults Aged 18 Years and Older, 1993*	Cholesterol Checked in Past 5 Years Percent
Hispanic or Latino	62
Not Hispanic or Latino	67
Black or African American	65
White	68
Gender	
Female	69
Male	64
Education level (aged 25 years and older)	
Less than high school	56
High school graduate	69
At least some college	78
Disability status	
Persons with activity limitations	72
Persons without activity limitations	66
Geographic variation	
Urban	68
Rural	63

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

12-16. (Developmental) Increase the proportions of persons with coronary heart disease who have their LDL-cholesterol level treated to a goal of less than or equal to 100 mg/dL.

Potential data source: National Health and Nutrition Examination Survey, CDC, NCHS.

Related Objectives From Other Focus Areas

Access to Quality Health Services

1-3. Counseling about health behaviors

1-7. Core competencies in health provider training

1-10. Delay or difficulty in getting emergency care

1-11. Rapid prehospital emergency care

Chronic Kidney Disease

4-2. Cardiovascular disease deaths in persons with chronic kidney failure

Educational and Community-Based Programs

7-2. School health education

7-5. Worksite health promotion programs

7-8. Satisfaction with patient education

7-10. Community health promotion programs

7-11. Culturally appropriate community health promotion

7-12. Older adult participation in community health promotion activities

Health Communication

11-1. Households with Internet access

11-2. Health literacy

11-4. Quality of Internet health information sources

11-6. Satisfaction with providers' communication skills

Nutrition and Overweight

19-1. Healthy weight in adults

19-2. Obesity in adults

19-3. Overweight or obesity in children and adolescents

19-5. Fruit intake

19-6. Vegetable intake

19-8. Saturated fat intake

19-9. Total fat intake

19-11. Calcium intake

19-16. Worksite promotion of nutrition education and weight management

Physical Activity and Fitness

22-1. No leisure-time physical activity

22-2. Moderate physical activity

22-3. Vigorous physical activity

22-6. Moderate physical activity in adolescents

22-7. Vigorous physical activity in adolescents

22-11. Television viewing

22-13. Worksite physical activity and fitness

22-14. Community walking

22-15. Community bicycling

Public Health Infrastructure

23-1. Public health employees access to Internet

23-3. Use of geocoding in health data systems

23-10. Continuing education and training by public health agencies

23-15. Data on public health expenditures

Tobacco Use

27-1. Adult tobacco use

27-2. Adolescent tobacco use

27-3. Initiation of tobacco use

27-4. Age at first use of tobacco

27-5. Smoking cessation by adults

27-10. Exposure to environmental tobacco smoke

27-16. Tobacco advertising and promotion targeting adolescents and young adults

27-17. Adolescent disapproval of smoking

Terminology

(A listing of all acronyms and abbreviations used in this publication appears in Appendix K.)

Angina (angina pectoris): A pain or discomfort in the chest that occurs when some part of the heart does not receive enough blood. It is a common symptom of coronary heart disease. Angina often recurs in a regular or characteristic pattern. However, it may first appear as a very severe episode or as frequently recurring bouts. When an established stable pattern of angina changes sharply—for example, it may be provoked by far less exercise than in the past, or it may appear at rest—it is referred to as unstable angina.

Angioplasty: A nonsurgical procedure used to treat blockages in blood vessels, particularly the coronary arteries that feed the heart. Also known as percutaneous transluminal coronary angioplasty (PTCA). A thin tube (catheter), fed through blood vessels to the point of blockage, is used to open the artery.

Anticoagulants: Drugs that delay the clotting (coagulation) of blood. When a blood vessel is plugged up by a clot and an anticoagulant is given, it tends to prevent new clots from forming or the existing clot from enlarging. An anticoagulant does not dissolve an existing blood clot.

Arrhythmia: A change in the regular beat or rhythm of the heart. The heart may seem to skip a beat, or beat irregularly, or beat very fast or very slowly.

Atherosclerosis: A type of hardening of the arteries in which cholesterol and other substances in the blood are deposited in the walls of arteries, including the coronary arteries that supply blood to the heart. In time, narrowing of the coronary arteries by atherosclerosis may reduce the flow of oxygen-rich blood to the heart.

Atrial fibrillation (AF): The most common sustained irregular heart rhythm encountered in clinical practice. AF occurs when the two small upper chambers of the heart (the atria) quiver instead of beating effectively, and blood cannot be pumped completely out of them when the heart beats, allowing the blood to pool and clot. If a piece of the blood clot in the atria becomes lodged in an artery in the brain, a stroke may result. AF is a risk factor for stroke and heart failure.

Blood pressure: The force of the blood pushing against the walls of arteries. Blood pressure is given as two numbers that measure systolic pressure (the first number, which measures the pressure while the heart is contracting) and diastolic pressure (the second number, which measures the pressure when the heart is resting between beats). Blood pressures 140/90 mmHg or above are considered high, while blood pressures in the range of 130-139/85-89 are high normal. Less than 130/85 mmHg is normal.

Body mass index (BMI): A number that indicates a person's body weight relative to height. BMI is a useful indirect measure of body composition, because it correlates highly with body fat in most people.

Cardiovascular disease (CVD): Includes a variety of diseases of the heart and blood vessels, coronary heart disease (coronary artery disease, ischemic heart disease), stroke (brain attack), high blood pressure (hypertension), rheumatic heart disease, congestive heart failure, and peripheral artery disease.

Cerebrovascular disease: Affects the blood vessels supplying blood to the brain. Stroke occurs when a blood vessel bringing oxygen and nutrients to the brain bursts or is clogged by a blood clot. Because of this rupture or blockage, part of the brain does not get the flow of blood it needs and nerve cells in the affected area die. Small stoke-like events like transient ischemic attacks (ITAs), which resolve in a day or less, are symptoms of cerebrovascular disease.

Cholesterol: A waxy substance that circulates in the bloodstream. When the level of cholesterol in the blood is too high, some of the cholesterol is deposited in the walls of the blood vessels. Over time, these deposits can build up until they narrow the blood vessels, causing atherosclerosis, which reduces the blood flow. The higher the blood cholesterol level, the greater is the risk of getting heart disease. Blood cholesterol levels of less than 200 mg/dL are considered desirable. Levels of 240 mg/dL or above are considered high and require further testing and possible intervention. Levels of 200-239 mg/dL are considered borderline. Lowering blood cholesterol reduces the risk of heart disease.

Congestive heart failure (or heart failure): A condition in which the heart cannot pump enough blood to meet the needs of the body's other organs. Heart failure can result from narrowed arteries that supply blood to the heart muscle and other factors. As the flow of blood out of the heart slows, blood returning to the heart through the veins backs up, causing congestion in the tissues. Often swelling (edema) results, most commonly in the legs and ankles, but possibly in other parts of the body as well. Sometimes fluid collects in the lungs and interferes with breathing, causing shortness of breath, especially when a person is lying down.

Coronary heart disease (CHD): A condition in which the flow of blood to the heart muscle is reduced. Like any muscle, the heart needs a constant supply of oxygen and nutrients that are carried to it by the blood in the coronary arteries. When the coronary arteries become narrowed or clogged, they cannot supply enough blood to the heart. If not enough oxygen-carrying blood reaches the heart, the heart may respond with pain called angina. The pain usually is felt in the chest or sometimes in the left arm or shoulder. When the blood supply is cut off completely, the result is a heart attack. The part of the heart muscle that does not receive oxygen begins to die, and some of the heart muscle is permanently damaged.

Coronary stenting: A procedure that uses a wire mesh tube (a stent) to prop open an artery that recently has been cleared using angioplasty. The stent remains in the artery permanently, holding it open to improve blood flow to the heart muscle and relieve symptoms, such as chest pain.

HDL (high-density lipoprotein) cholesterol: The so-called good cholesterol. Cholesterol travels in the blood combined with protein in packages called lipoproteins. HDL is thought to carry cholesterol away from other parts of the body back to the liver for removal from the body. A low level of HDL increases the risk for CHD, whereas a high HDL level helps protect against CHD.

Heart attack (also called acute myocardial infarction): Occurs when a coronary artery becomes completely blocked, usually by a blood clot (thrombus), resulting in lack of blood flow to the heart muscle and therefore a loss of needed oxygen. As a result, part of the heart muscle dies (infarcts). The blood clot usually forms over the site of a cholesterol-rich narrowing (or plaque) that has burst or ruptured.

Heart disease: The leading cause of death and a common cause of illness and disability in the United States. Coronary heart disease and ischemic heart disease are specific names for the principal form of heart disease, which is the result of atherosclerosis, or the buildup of cholesterol deposits in the coronary arteries that feed the heart.

High blood pressure: A systolic blood pressure of 140 mmHg or greater or a diastolic pressure of 90 mmHg or greater. With high blood pressure, the heart has to work harder, resulting in an increased risk of a heart attack, stroke, heart failure, kidney and eye problems, and peripheral vascular disease.

Ischemic heart disease: Includes heart attack and related heart problems caused by narrowing of the coronary arteries and therefore a decreased supply of blood and oxygen to the heart. Also called coronary artery disease and coronary heart disease.

LDL (low-density lipoprotein): The so-called bad cholesterol. LDL contains most of the cholesterol in the blood and carries it to the tissues and organs of the body, including the arteries. Cholesterol from LDL is the main source of damaging buildup and blockage in the arteries. The higher the level of LDL in the blood, the greater is the risk for CHD.

Lipid: Fat and fat-like substances, such as cholesterol, that are present in blood and body tissues.

Peripheral vascular disease: Refers to diseases of any blood vessels outside the heart and to diseases of the lymph vessels. It is often a narrowing of the blood vessels that carry blood to leg and arm muscles. Symptoms include leg pain (for example, in the calves) when walking and ulcers or sore on the legs and feet.

Stroke: A form of cerebrovascular disease that affects the arteries of the central nervous system. A stroke occurs when blood vessels bringing oxygen and nutrients to the brain burst or become clogged by a blood clot or some other particle. Because of this rupture or blockage, part of the brain does not get the flow of blood it needs. Deprived of oxygen, nerve cells in the affected area of the brain cannot function and die within minutes. When nerve cells cannot function, the part of the body controlled by these cells cannot function either.

References

1. National Heart, Lung, and Blood Institute. *Morbidity and Mortality: 1998 Chartbook on Cardiovascular, Lung, and Blood Diseases*. Bethesda, MD: National Institutes of Health, Public Health Service, National Heart, Lung, and Blood Institute, October 1998.

2. Sempos, C.T.; Cleeman, J.I.; Carroll, M.K.; et al. Prevalence of high blood cholesterol among U.S. adults: An update based on guidelines from the second report of the National Cholesterol Education Program Adult Treatment Panel. *Journal of the American Medical Association*, 269:3009-3014, 1993.

3. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. National Cholesterol Education Program: Second Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel II). *Circulation* 89:1329-1445, 1994.

4. The Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Archives of Internal Medicine* 157:2413-2446, 1997.

5. Burt, V.L.; Culter, J.A.; Higgins, M.; et al. Trends in the prevalence, awareness, treatment, and control of hypertension in the adult U.S. population. *Hypertension* 26:60-69, 1995.

6. Centers for Disease Control and Prevention. Mortality from congestive heart failure—United States, 1980-1990. *Morbidity and Mortality Weekly Report* 43:77-78, 1994.

7. Gillum, R.F. Epidemiology of heart failure in the United States. *American Heart Journal* 126:1042-1047, 1993.

8. Lenfant, C. Fixing the failing heart. *Circulation* 95:771-772, 1997.

9. Croft, J.B.; Giles, W.H.; Pollard, R.A.; Casper, M.L.; and Livengood, Jr., R.F. National trends in the initial hospitalizations for heart failure. *Journal of the American Geriatrics Society* 45:270-275, 1997.

10.. Huston, S.L.; Lengerich, E.J.; Conlisk, E.; and Passaro, K. Trends in ischemic heart disease death rates for blacks and whites—United States, 1981-1995. *Morbidity and Mortality Weekly Review* 47:945-949, 1998.

11. Gillum, R.F.; Muscolino, M.F.; and Madans, J.A. Fatal MI among black men and women. *Annals of Internal Medicine* 127:111-118, 1997.

12. National Heart Attack Alert Program Coordination Committee. Working Group Report on Educational Strategies to Prevent Prehospital Delay in Patients at High Risk for Acute Myocardial Infarction. NIH Publication No. 97-3787. Bethesda, MD: National Heart, Lung, and Blood Institute, National Institutes of Health, 1997.

13. Burt, V.; Whelton, P.; and Roccella, E.J. Prevalence of hypertension in the U.S. adult population. *Hypertension* 25:305-313, 1995.

14. Pate, R.R.; Pratt, M.; Blair, S.N.; et al. Physical Activity and Public Health: A Recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of the American Medical Association* 273:402-407, 1995.

15. Physical Activity and Cardiovascular Health. NIH Consensus Development Panel on Physical Activity and Cardiovascular Health. *Journal of the American Medical Association* 276(3):241-246, 1996.

16. Dunn, A.L.; Marcus, B.H.; Kampert, J.B.; Garcia,

M.E.; Kohl, H.W.; and Blair, S.N. Comparison of lifestyle and structured interventions to increase physical activity and cardiorespiratory fitness: a randomized trial. *Journal of the American Medical Association* 281:327-334, 1999.

17. Manson, J.A.; Hu, F.; Rich-Edwards, J.W.; Colditz, G.; Stampfer, M.J.; Willett, W.H.; Speizer, F.; and Hennekens, C. A prospective study of walking as compared with vigorous exercise in the prevention of coronary heart disease in women. *New England Journal of Medicine* 341:650-658, 1999.

18. U.S. Department of Health and Human Services (HHS). *Physical Activity and Health: A Report of the Surgeon General.* Atlanta, GA: The Department, Centers for Disease Control (CDC) and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.

19. HHS. *The Health Benefits of Smoking Cessation. A Report of the Surgeon General.* HHS Publ. No. CDC 90-8416. Atlanta, GA: HHS, Public Health Services, Centers for Disease Control, NCCDPHP. Office on Smoking and Health, 1990.

20. Freedman, D.S.; Dietz, W.H.; Srinivasan, S.R.; and Berenson, G.S. The relation of overweight to cardiovascular risk factors among children and adolescents: the Bogalusa Heart Study. *Pediatrics* 103:1175-1182, 1999.

21. Winkleby, M.; Robinson, T.; Sundquist, J.; and Kraemer, H. Ethnic variations in cardiovascular disease risk factors among children and young adults: Findings from the Third National Health and Nutrition Examination Survey 1998-1994. *Journal of the American Medical Association* 281:1006-1013, 1999.

22. Leon, A.S.; Cornett, J.; Jacobs, Jr., D.R.; and Rauramaa, R. Leisure time physical activity and risk of coronary heart disease and death: The Multiple Risk Factor Intervention Trial. *Journal of the American Medical Association* 258:2388-2395, 1987.

23. O'Connor, G.T.; Hennekens, C.H.; Willett, W.H.; Goldhaber, S.Z.; Paffenbarger, Jr., R.S.; Breslow, J.L.; and Buring, J.E. Physical exercise and reduced risk of nonfatal myocardial infarction. *American Journal of Epidemiology* 142:1147-1156, 1995.

24. Blair, S.N.; Kohl, III, H.W.; Barlow, C.E.; Paffenbarger, Jr., R.S.; Gibbons, L.W.; and Macera, C.A. Changes in physical fitness and all cause mortality: A prospective study of healthy and unhealthy men. *Journal of the American Medical Association* 273:1093-1098, 1995.

25. Willett, W.H.; Dietz, W.H.; and Colditz, G.A. Primary care: Guidelines for healthy weight. *New England Journal of Medicine* 341:427-434, 1999.

26. Roccella, E.J., and Horan, M.J. The National High Blood Pressure Education Program: measuring progress and assessing its impact. *Health Psychology* (7 suppl.):237-303, 1998.

27. HHS. *Health, United States, 1998.* Hyattsville, MD: the Department, Centers for Disease Control and Prevention, National Center for Health Statistics, 1998.

28. Kannel, W.B.; Dawber, T.R.; and McGee, D.L. Perspectives on systolic hypertension, the Framingham Study. *Circulation* 61:1179-82, 1980.

29. The Systolic Hypertension in the Elderly Program (SHEP) Cooperative Research Group. Prevention of stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension. Final results of the SHEP. *Journal of the American Medical Association* 265:3255-3264, 1991.

30. Cleeman, J.I., and Lenfant, C. The National Cholesterol Education Program: Progress and Prospects. *Journal of the American Medical Association* 280:2099-2104, 1998.

31. National Heart, Lung, and Blood Institute. Cholesterol Awareness Surveys. Press conference (December 4, 1995). Bethesda, MD: the Institute.

32. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: Evidence Report. *Journal of Obesity Research* (Suppl 2); September, 1998.

33. *Smoking Cessation: Clinical Practice Guidelines, No. 18.* HHS Pub. No. (AHCPR) 96-06920. Washington, DC: HHS, Public Health Service, Agency for Health Care Policy and Research, 1996.

34. Marano, M.A. Current estimates from the National Health Interview Survey, 1995. National Center for Health Statistics. *Vital Health Statistics* 10(199):1-428, 1998.

35. National Heart Attack Alert Program Coordinating Committee 60 Minutes to Treatment Working Group. Emergency Department: Rapid identification and treatment of patients with

acute myocardial infarction. *Annals of Emergency Medicine* 23:311-329, 1994.

36. Ryan, T.J.; Antman, E.M.; Brooks, N.H.; et al. 1999 update: ACC/AHA guidelines for the management of patients with acute myocardial infarction: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on Management of Acute Myocardial Infarction). *Journal of the American College of Cardiology* 34:890-911, 1999.

37. Boersma, E.; Maas, A.C.P.; Deckers, J.W.; and Simoons, M.L. Early thrombolytic treatment in acute myocardial infarction: Reappraisal of the golden hour. *Lancet* 348:771-775, 1996.

38. Betts, J.H. Late assessment of thrombolytic efficacy with altiplase (rt-PA) 6-24 hours after onset of acute myocardial infarction. *Australian New Zealand Journal of Medicine* 23:745-748, 1993.

39. The Global Use of Strategies to Open Occluded Coronary Arteries in Acute Coronary Syndrome's (GUSTO IIb) Angioplasty Substudy Investigators. A clinical trial comparing primary coronary angioplasty with tissue plasminogen activator for acute myocardial infarction. *New England Journal of Medicine* 336:1621-1628, 1997.

40. Bahr, R.D.; Introduction: community message in acute myocardial ischemia. *Clinician* 14:1, 1996.

41. National Institute of Stroke and Neurological Diseases and T-PA Working Group. Tissue Plasminogen Activator for Acute Ischemic Stroke. *New England Journal of Medicine* 333(24):1581-1587, 1995.

42. American Heart Association. Emergency Cardiovascular Care Programs. Chain of Survival. Links in the Chain. Retrieval June 1999 <http://www.proed.net/ecc/chain/links.htm>.

43. National Heart Attack Alert Program Coordinating Committee, Access to Care Subcommittee. Access to timely and optimal care of patients with acute coronary syndromes—community planning considerations: Report by the National Heart Attack Alert Program. *Journal of Thrombosis and Thrombolysis* 6:19-46, 1998.

44. National Heart Attack Alert Program. *Patient/Bystander Recognition and Action: Rapid Identification and Treatment of Acute Myocardial Infarction.* NIH Pub. No. 93-3303 Bethesda, MD: National Heart, Lung, and Blood Institute, National Institutes of Health, 1993.

45. Criqui, M.H.; Langer, R.D.; Fronek, A.; Feigelson, H.S.; Klauber, M.R.; McCann, T.J.; et al. Mortality over a period of 10 years in patients with peripheral arterial disease. *New England Journal of Medicine* 326(6):381-386, 1992.

46. Salonen, J.T., and Salonen, R. Ultrasonographically assessed carotid morphology and the risk of coronary heart disease. *Arteriosclerosis and Thrombosis* 11(5):1245-1249, 1991.

47. Kannel, W.B., and Schatzkin, A. Sudden death: Lessons from subsets in population studies. *Journal of the American College of Cardiology* 5(6 suppl.):141-149B, 1985.

48. Kuller, L.; Perper, J.; and Cooper, M. Demographic characteristics and trends in arteriosclerotic heart disease mortality: Sudden death and myocardial infarction. *Circulation* 51(1 suppl.):III-1-III-15, 1975.

49. Scandinavian Simvastatin Survival Study Group. Randomized trial of cholesterol lowering in 4444 patients with coronary heart disease: the Scandinavian Simvastatin Survival Study (4S). *Lancet* 334:1383-1389, 1994.

50. Sacks, F.M.; Pfeffer, M.A.; Moye, L.A.; et al., for the Cholesterol and Recurrent Events Trial Investigators. The effect of pravastatin on coronary events after myocardial infarction in patients with average cholesterol levels. *New England Journal of Medicine* 335:1001-1009, 1996.

51. The Long-Term Intervention with Pravastatin in Ischaemic Disease (LIPID) Study Group. Prevention of cardiovascular events and death with pravastatin in patients with coronary heart disease and a broad range of initial cholesterol levels. *New England Journal of Medicine* 339:1349-1357, 1998.

52. Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. *The Sixth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure.* NIH Pub. No. 98-4080. Bethesda, MD: National High Blood Pressure Education Program, National Institutes of Health, National Heart, Lung, and Blood Institute, November 1998, 24-25.

53. Psaty, B.M.; Smith, N.L.; Siscovick, D.S.; et al. Health outcomes associated

with antihypertensive therapies used as first-line agents: a systematic review and meta-analysis. *Journal of the American Medical Association* 277:739-745, 1997.

54. MacMahon, S., and Rodgers, A. The effect of blood pressure reduction in older patients: an overview of five randomized controlled trials in elderly hypertensives. *Clinical and Experimental Hypertension* 15967-15978, 1993.

55. CDC. State-specific Prevalence of Current Cigarette and Cigar Smoking Adults—United States, 1998. *Morbidity and Mortality Weekly Report* 48(45), 1999.

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HIV

Co-Lead Agencies: Centers for Disease Control and Prevention;
Health Resources and Services Administration

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Goal

Prevent HIV infection and its related illness and death.

Overview

Beginning in 1981, a new infectious disease, AIDS, or acquired immunodeficiency syndrome, was identified in the United States.[1] Several years later, the causative agent of AIDS—human immunodeficiency virus (HIV)—was discovered. This discovery coincided with the growing recognition of AIDS in the United States as part of a global infectious disease pandemic.

Currently, HIV/AIDS has been reported in virtually every racial and ethnic population, every age group, and every socioeconomic group in every State and most large cities in the United States. Initially identified among men who have sex with men on the East and West Coasts,[2] the AIDS epidemic is composed of diverse multiple subepidemics that vary by region and community. By the end of 1998, more than 680,000 cases of AIDS had been reported, and nearly 410,800 people had died from HIV disease or AIDS.[3]

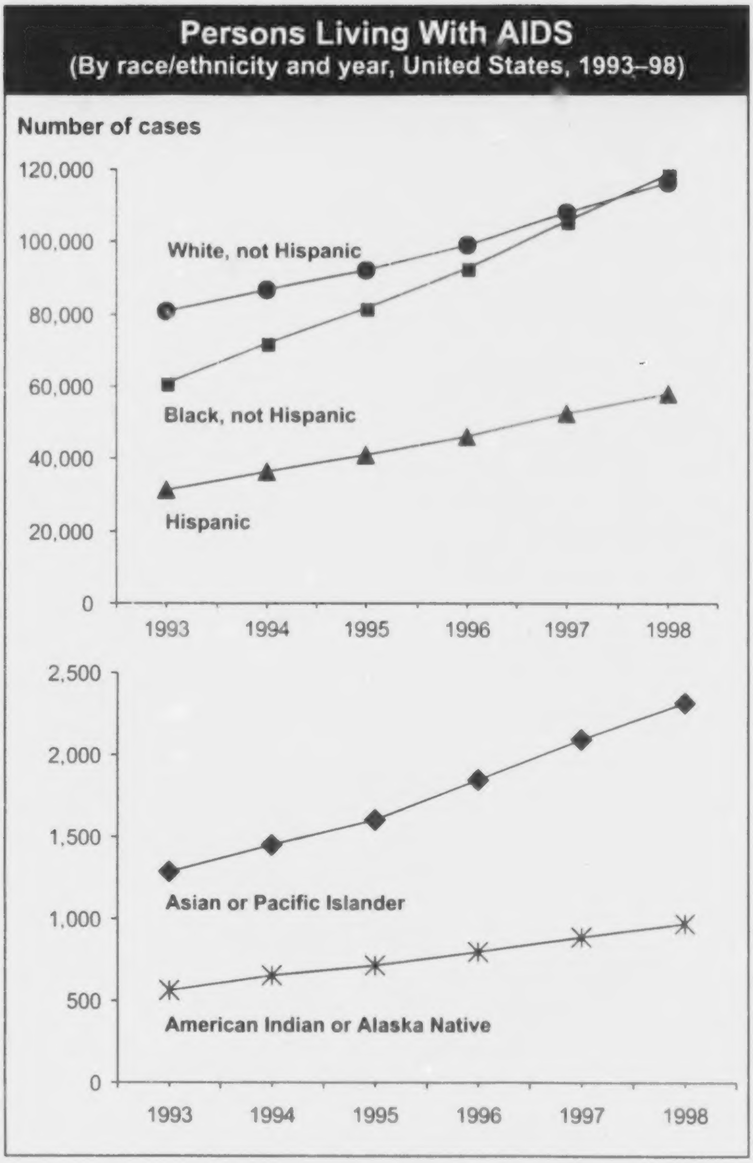
Issues

Estimates of the number of people infected with HIV in the United States range from 650,000 to 900,000.[4] The HIV/AIDS subepidemics not only vary by region and community, but also may vary by population, risk behavior, and geography. Disparities in the rate of infection among certain racial and ethnic groups, particularly African American and Hispanic populations, remain a challenge. Recently introduced therapies for HIV/AIDS have reduced illness, disability, and death due to HIV/AIDS; however, access to culturally and linguistically appropriate testing and care may limit progress in this area.

In the United States, HIV/AIDS remains a significant cause of illness, disability, and death, despite declines in 1996 and 1997.[5] Current surveillance provides population-based HIV/AIDS data for tracking trends in the epidemic, targeting and allocating resources for prevention and treatment services, and planning and conducting program evaluation activities. Since the early 1980s, surveillance studies have identified four distinct populations and issues that have affected the epidemic in these populations:

- Men who have sex with men, facilitated by frequent changes of sex partners in highly infected sexual networks and by high-risk sexual practices.

- Injection drug users, facilitated by the shared use of needles and syringes contaminated with HIV-infected blood.


Persons Living With AIDS
(By race/ethnicity and year, United States, 1993–98)

Source: CDC. *HIV/AIDS Surveillance Report*, Vol. 11, No. 1, 1999.

- Heterosexual persons (principally in certain racial and ethnic populations), facilitated by (1) a high rate of HIV among drug-using populations that resulted in heterosexual transmission to some partners, (2) high rates of other sexually transmitted diseases (STDs) that can increase both susceptibility to transmissibility of HIV infection, (3) high-risk sexual practices (mainly unprotected sex) associated with certain addictive substances, such as crack cocaine, and (4) sex in exchange for drugs.

- Perinatal transmission among infants, caused by undetected or untreated HIV infection in pregnant females (although the number of perinatally infected infants has declined dramatically since the mid 1990s to a point where elimination of perinatal transmission in the United States may be possible).

The proportion of different populations affected by HIV/AIDS has changed over time. By 1998, 83 percent of the cumulative AIDS cases had occurred in males, 16 percent in females, and 1 percent in children.[3] The response to the epidemic reflects these changes:

- Comparing the 1980s to the 1990s, the proportion of AIDS cases in white men who have sex with men declined, whereas the proportion in females and males in other racial and ethnic populations increased, particularly among African Americans and Hispanics (see Disparities section). AIDS cases also appeared to be increasing among injection drug users and their sexual partners.[5]

- Increases among women have occurred over time. By the mid 1980s, a majority of AIDS cases had been reported among males, with only 7 percent reported among females in 1983.[6] Reported AIDS cases in females have increased steadily since then and accounted for nearly 23 percent of the cases reported in 1998.[3]

- Monitoring and tracking of the current HIV/AIDS epidemic remains a challenge. Even though AIDS may occur much later than infection with HIV, only AIDS cases are currently reported by all State health departments. Because tracking HIV is more accurate for tracking the status of the epidemic and because States are making progress in reporting HIV infection, it is anticipated that key baseline data about HIV will be available by the early 2000s.[7]

- Even though a test for HIV was developed and made widely available in the early to mid-1980s, the lack of available treatment until 1995, negative implications of treatment (including concerns about lack of confidentiality), and possible discrimination and stigmatization resulted in barriers to the reporting of HIV infection.

The lifetime costs of health care associated with HIV, in light of recent advances in diagnostics and therapeutics, have grown from $55,000 to $155,000 or more per person.[8] These costs mean that HIV prevention efforts may be even more cost-effective and even cost-saving to society. Prevention efforts include availability of culturally and linguistically appropriate HIV counseling and testing, partner counseling, and referral systems for individuals at high risk for HIV infection; needle and syringe exchange programs; and information, education, treatment and counseling for injection drug users.

The true extent of the epidemic remains difficult to assess for several reasons, including the following:

- Because of the long period of time from initial HIV infection to AIDS and because highly active antiretroviral therapy (HAART) has slowed the progression to AIDS, new cases of AIDS no longer provide accurate information about the current HIV epidemic in the United States.

- Because of a lack of awareness of HIV serostatus as well as delays in accessing counseling, testing, and care services by individuals who may be infected or are at risk of infection, some populations do not perceive themselves to be at risk. As a result, some HIV-infected persons are not identified and provided care until late in the course of their infection.

Trends

HIV infection rates appear to have stabilized since the early 1990s at about 40,000 new infections per year, which represents a slowing from growth rates experienced in the mid-1980s.[4] About 750,000 to 900,000 persons are estimated to be infected with HIV, with over 200,000 to 250,000 persons who are not aware of their infection. About 250,000 persons are estimated to be in treatment with new antiretroviral treatment therapies, and another 250,000 are not currently in treatment.[5, 9]

Significant changes in the epidemic have occurred over time. In 1992, AIDS became a leading cause of death among persons aged 25 to 44 years, but by 1997 had dropped to the eighth leading cause of death in this age group. In 1997, HIV/AIDS remained the leading cause of death only for African Americans among persons in this age group.[10, 11] Between 1992 and 1997, the number of persons reported living with AIDS increased in all groups as a result of the 1993 expanded AIDS case definition and, more recently, improved survival rates due to new HAART treatment.

Some of these changes are reflected in the following:

- Women accounted for just under 14 percent of persons over age 13 years living with AIDS in 1992, compared with 20 percent in 1998.[3, 12]

- By the end of 1998, the number of African Americans living with AIDS, which increased from 33 percent of the AIDS population in 1992 to 40 percent in 1998, was almost identical to the number of whites living with AIDS.[3]

- Persons living in the South accounted for 34 percent of AIDS cases in 1992 and 38.5 percent in 1998. Persons living in the Northeast accounted for 28.3 percent in 1992 and 31.0 percent in 1998. The proportion living in the West declined from 23.8 percent to 20.8 percent.[3, 13]

- By December 1998, approximately 297,136 persons were reported to be living with AIDS, compared with 269,775 in 1997.[3, 14]

In late 1982, cases of AIDS attributed to blood transfusions were first reported in the United States.[15, 16] The publication, dissemination, and implementation of specific guidelines and recommendations to prevent HIV infection among health care workers and to test donated blood for HIV[17, 18, 19, 20] have resulted in a reduction in transfusion-related AIDS and increases in safety among health workers.

Another prevention success has been the 66 percent decline in perinatal transmission from 1992 to 1997. With the finding that perinatal HIV transmission rates could be reduced substantially with zidovudine therapy during pregnancy, the U.S. Public Health Service issued guidelines recommending that HIV counseling and voluntary testing become a part of routine prenatal care for all pregnant women.[21] This policy ensures that HIV-infected pregnant women have access to important health care for themselves and also have the opportunity to reduce the risk of HIV transmission to their infants. Subsequent declines in new cases of AIDS among children demonstrate that these strategies are showing success in reducing mother-to-infant HIV transmission.[22]

However, initial declines in deaths from AIDS after the availability of treatments have slowed. Deaths from AIDS continued to decline throughout 1997 and 1998 (down 42 percent and 20 percent, respectively, compared to 1996), and the number of persons living with AIDS (AIDS prevalence) in 1997 and 1998 increased by 12 percent and 10 percent, respectively.[3, 13] If declines continue in newly diagnosed AIDS cases in the coming years, an increasing number of persons will be living with HIV infection. As HIV surveillance extends to additional States, so will the ability to monitor HIV cases and to direct prevention and treatment services to people with asymptomatic infection or mild illness.

Principal health determinants. Behaviors (sexual practices, substance abuse, and accessing prenatal care) and biomedical status (having other STDs) are major determinants of HIV transmission. Unprotected sexual contact, whether homosexual or heterosexual, with a person infected with HIV and sharing drug-injection equipment with an HIV-infected individual account for most HIV transmission in the United States.[23, 24] Increasing the number of people who know their HIV serostatus is an important component of a national program to slow or halt the transmission of HIV in the United States.

For persons infected with HIV, behavioral determinants also play an important role in health maintenance. Although drugs are available specifically to prevent and treat a number of opportunistic infections, HIV-infected individuals also need to make lifestyle-related behavioral changes to avoid many of these infections. The new HIV antiretroviral drug therapies for HIV infection bring with them difficulties in adhering to complex, expensive, and demanding medication schedules, posing a significant challenge for many persons infected with HIV.

Because HIV infection weakens the immune system, people with tuberculosis (TB) infection and HIV infection are at very high risk of developing active TB disease.[25]

Interventions. Interventions for combating HIV are behavioral as well as biomedical. Recent advances in antiretroviral therapy have been credited with dramatic declines in deaths associated with HIV/AIDS. However, declines in overall AIDS cases, particularly in the early epicenters of the epidemic such as San Francisco and New York, predate the advent of antiretroviral therapies and support the belief that behavior-based prevention programs are effective. In San Francisco, for example, new cases of AIDS among men who have sex with men began dropping in 1992, suggesting that sustained, comprehensive prevention activities begun in the 1980s succeeded in reducing HIV transmission in this group.[26]

Behavioral interventions to prevent HIV vary depending on the audience for whom the program is designed, who designed it, and funds available. Effective community-level prevention strategies in the United States have included social marketing interventions to increase condom use and messages about safer sex and needle-sharing that rely on popular opinion leaders and role model stories. Effective small and large group interventions have aimed at increasing safer sex practices for high-risk HIV-infected men and women and have tended to employ cognitive behavioral and skill-building methods.[26]

Several effective individual counseling or education interventions have focused on increasing condom use and other safer sex practices for HIV-infected persons. For example, at the individual level, client-centered HIV counseling and testing appear to be effective in preventing high-risk uninfected persons from becoming infected and in helping HIV-infected persons prevent transmission to uninfected partners. Intervention venues vary and include STD clinic waiting rooms, drug treatment centers, schools, community agencies, street settings, and community settings where HIV-infected and high-risk uninfected persons congregate.[26]

While HIV testing in STD clinics is an important intervention, detection, and treatment of other STDs are also an important biomedical component of an HIV prevention program that should include both behavioral and biomedical interventions. STD prevention programs must address STD concerns and their cofactor role in HIV transmission. Early STD detection and treatment are a biomedical tool for lowering the risk for sexual transmission of HIV infection. Behavioral interventions emphasize reducing the number of sex partners, knowing the serostatus of one's partner, using condoms consistently and correctly, and avoiding risky sexual behaviors.[23, 27, 28]

Disparities

In the United States, African Americans and Hispanics have been affected disproportionately by HIV and AIDS, compared to other racial and ethnic groups. Through December 1998, 688,200 cases of AIDS had been reported among persons of all ages and racial and ethnic groups, including 304,094 cases among whites, 251,408 cases among African Americans, and 124,841 cases among Hispanics. Although 55 percent of the reported AIDS cases occurred among African

Americans and Hispanics, these two population groups represent an estimated 13 percent and 12 percent, respectively, of the total U.S. population.[3]

In 1997, AIDS remained the leading cause of death for all African Americans aged 25 to 44 years—the second leading cause among African American females and the leading cause among African American males.[10] In 1996, for the first time, African Americans accounted for a larger proportion of AIDS cases than whites, and this trend has continued. The AIDS case rate among African Americans in calendar year 1998 was 66.4 per 100,000 persons, or eight times the rate for whites (8.2 per 100,000) and over twice the rate for Hispanics (28.1 per 100,000).[3]

Among women with AIDS, African Americans and Hispanics have been especially affected, accounting for nearly 77 percent of cumulative cases reported among women by 1998. Of the 109,311 AIDS cases in women reported through December 1998, 61,874 cases occurred in African American women and 21,937 occurred in Hispanic women.[3]

For young adults aged 20 to 24 years, 24,437 cumulative AIDS cases were reported through December 1998. Of this total, 10,107 (41 percent) occurred among African Americans, 8,804 (36 percent) among whites, and 5,203 (21 percent) among Hispanics. Overall, 73 percent of the AIDS cases in this age group occurred among males and 27 percent among females. Among African Americans in this age group, 63 percent were male, and 37 percent were female. Among Hispanics, 74 percent were male, and 26 percent were female. Because the time from initial infection with HIV to the development of AIDS is long and variable (often 8 to 10 years or more), many of these young adults likely acquired their infections while in their teens.[3]

Among teenagers aged 13 to 19 years, 3,423 cumulative AIDS cases had been reported through December 1998.[3] In this age group, 1,047 cases (31 percent) occurred among whites, 1,654 (48 percent) among African Americans, and 668 (20 percent) among Hispanics. Overall, males accounted for 61 percent of the AIDS cases in this age group, and females accounted for 39 percent. Among African American teenagers with AIDS, 46 percent were male, and 54 percent were female. Among Hispanic teens, 67 percent of those with AIDS were male, and 33 percent were female. Among white teenagers with AIDS, 79 percent were male, and 21 percent were female.[3]

The disproportionate impact of HIV/AIDS on African Americans and Hispanics underscores the importance of implementing and sustaining effective prevention efforts for these racial and ethnic populations. HIV prevention efforts must take into account not only the multiracial and multicultural nature of society, but also other social and economic factors—such as poverty, underemployment, and poor access to the health care system. These factors affect health status and disproportionately affect African American, Hispanic, Alaska Native, and American Indian populations.

Opportunities

In the 21st century, strategies for reducing HIV/AIDS transmission will continue to evolve and will require shifts from current efforts.[20] Future strategies should focus on:

- Continuing to address the disproportionate impact of HIV/AIDS among certain racial and ethnic groups.
- Enhancing prevention strategies for populations that are particularly high risk, such as injection drug users, homeless persons, runaway youth, mentally ill persons, and incarcerated persons. Some of these populations are also difficult to reach.
- Increasing the number of people who learn their HIV status in order to detect HIV infection when the potential for transmission is greatest and the need for prevention, care, and treatment, including HAART, is greatest.
- Reaching high-risk seronegative people to help them to stay uninfected.
- Improving access to HAART, thereby reducing deaths and HIV-associated illness and, possibly, infection of others.
- Detecting and treating ulcerative and inflammatory STDs, especially in groups at risk for HIV infection.
- Setting the discovery of a safe and effective HIV vaccine as a reachable goal, as a result of ongoing HIV vaccine testing. The development and testing of candidate microbicides may be important in enhancing prevention efforts until a vaccine is available.

Interim Progress Toward Year 2000 Objectives

Data to assess progress are available for 13 of the 17 Healthy People 2000 objectives. Two objectives have met or exceeded the year 2000 targets. The objective to lower the risk of transfusion-transmitted HIV infection exceeded its target, and the objective to protect workers from exposure to bloodborne infections was met with the Occupational Safety and Health Administration's bloodborne pathogens standard in December 1991. Data show progress toward the year 2000 targets for objectives to slow the rise in the rate of new AIDS cases, contain the rate of HIV infection, and increase the proportion of sexually active females whose partners used condoms at last sexual intercourse. The objective to increase the proportion of HIV-positive people who know their serostatus is moving away from its target, as are objectives for counseling, outreach, and school-based AIDS education.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99*.

13. HIV

Goal: Prevent HIV infection and its related illness and death.

Number	Objective
13-1	New AIDS cases
13-2	AIDS among men who have sex with men
13-3	AIDS among persons who inject drugs
13-4	AIDS among men who have sex with men and who inject drugs
13-5	New HIV cases
13-6	Condom use
13-7	Knowledge of serostatus
13-8	HIV counseling and education for persons in substance abuse treatment
13-9	HIV/AIDS, STD, and TB education in State prisons
13-10	HIV counseling and testing in State prisons
13-11	HIV testing in TB patients
13-12	Screening for STDs and immunization for hepatitis B
13-13	Treatment according to guidelines
13-14	HIV-infection deaths
13-15	Interval between HIV infection and AIDS diagnosis
13-16	Interval between AIDS diagnosis and death from AIDS
13-17	Perinatally acquired HIV infection

13-1. Reduce AIDS among adolescents and adults.

Target: 1.0 new case per 100,000 persons.

Baseline: 19.5 cases of AIDS per 100,000 persons aged 13 years and older in 1998. Data are estimated; adjusted for delays of AIDS in reporting.

Target setting method: Better than the best.

Data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

Persons Aged 13 Years and Older, 1998	New AIDS Cases 13-1. Both Sexes	Females*	Males*
	Rate per 100,000		
TOTAL	19.5	8.8	30.8
Race and ethnicity			
American Indian or Alaska Native	9.4	4.5	14.5
Asian or Pacific Islander	4.3	1.2	7.8
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	33.0	13.8	52.2
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	82.9	48.5	122.9
White	8.5	2.2	15.2
Family income level			
Poor	DNC	DNC	DNC
Near poor	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
*Data for females and males are displayed to further characterize the issue.

Historically, AIDS incidence data have served as the basis for assessing needs for prevention and treatment programs. However, because of the effect of potent antiretroviral therapies, AIDS incidence no longer can provide unbiased information on HIV incidence patterns; it is hoped that AIDS will not develop in the growing number of HIV-infected persons as they benefit from these new therapies. Persons reported with AIDS will increasingly represent persons who were diagnosed too late for them to benefit from treatments, persons who either did not seek or had no access to care, or persons who failed treatment. This objective will be modified to track HIV cases as additional States implement HIV surveillance as an extension of their current AIDS case surveillance systems.

13-2. Reduce the number of new AIDS cases among adolescent and adult men who have sex with men.

Target: 13,385 new cases.

Baseline: 17,847 new cases of AIDS in 1998 among males aged 13 years and older. Data are estimated; risk is redistributed; adjusted for delays in reporting.

Target setting method: 25 percent improvement.

Data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

In 1998, an estimated 17,847 AIDS cases were diagnosed among men having sex with men. This was a decrease from 1997 and part of a continuing trend. The decline is a result of prevention activities and the impact of and access to potent antiretroviral therapies which are delaying progression to AIDS in many HIV-infected individuals. This objective will be modified when additional States implement HIV infection surveillance as an extension of their current AIDS case surveillance systems.

13-3. Reduce the number of new AIDS cases among females and males who inject drugs.

Target: 9,075 cases.

Baseline: 12,099 new cases of AIDS among injection drug users aged 13 years and older (females, 3,667; males, 8,432) in 1998. Data are point estimates; risk redistributed; adjusted for delays in reporting.

Target setting method: 25 percent improvement.

Data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

In 1998, an estimated 12,099 cases were diagnosed among adult men and women who injected drugs. This was a decrease from the previous year and part of a continuing trend. The decline is a result of prevention activities and the impact of potent antiretroviral therapies which are delaying progression to AIDS in many HIV-infected individuals.

13-4. Reduce the number of new AIDS cases among adolescent and adult men who have sex with men and inject drugs.

Target: 1,592 cases.

Baseline: 2,122 new cases of AIDS among males aged 13 years and older in 1998. Data are point estimates; risk redistributed; adjusted for delays in reporting.

Target setting method: 25 percent improvement.

Data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

In 1998, an estimated 2,122 AIDS cases were diagnosed among adult and adolescent men who have sex with men and inject drugs. This was a decrease from 1997 and part of a continuing trend. The decline is a result of prevention activities and the impact of potent antiretroviral therapies which are delaying progression to AIDS in many HIV-infected individuals. This objective will be modified when additional States implement HIV infection surveillance as an extension of their current AIDS case surveillance systems.

13-5. (Developmental) Reduce the number of cases of HIV infection among adolescents and adults.

Potential data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

Recent advances in HIV treatment have slowed the progression of HIV disease for infected persons on treatment and contributed to a decline in AIDS incidence These advances in treatment have diminished the ability of AIDS surveillance data to represent trends in HIV incidence or to represent the impact of the epidemic on the health care system. Once HIV case surveillance is implemented nationwide by 2001, CDC will be able to report baseline and progress toward the objective of "reducing the annual incidence of HIV infection."

13-6. Increase the proportion of sexually active persons who use condoms.

Target: 50 percent.

Baseline: 23 percent of unmarried females aged 18 to 44 years reported condoms used by partners in 1995. Data on males aged 18 to 49 years will be collected and reported by 2003.

Target setting method: Better than the best.

Data source: National Survey of Family Growth (NSFG), CDC, NCHS.

Unmarried Females 18 to 44 years, 1995	Condom Use Females, Aged 18 to 44 Years Reporting Condom Use by Partners* Percent
TOTAL	23
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	22
White	23
Hispanic or Latino	17
Aged 18 to 19 years	16
Aged 20 to 24 years	18
Aged 25 to 29 years	19
Aged 30 to 34 years	22
Aged 35 to 44 years	9
Not Hispanic or Latino	24
Black or African American	22
Aged 18 to 19 years	31
Aged 20 to 24 years	35
Aged 25 to 29 years	23
Aged 30 to 34 years	17
Aged 35 to 44 years	12
White	24
Aged 18 to 19 years	39
Aged 20 to 24 years	29
Aged 25 to 29 years	24
Aged 30 to 34 years	14
Aged 35 to 44 years	18
Family income level	
Poor	16
Near poor	21
Middle/high income	27

Unmarried Females 18 to 44 years, 1995	**Condom Use** **Females, Aged 18 to 44 Years Reporting Condom Use by Partners*** Percent
Education level (aged 25 to 44 years)	
Less than high school	7
High school	15
At least some college	25
Geographic location	
Urban	24
Rural	18

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for both genders and for males currently are not collected.

When used consistently and correctly, latex condoms are highly effective in preventing HIV transmission. Increased use of latex condoms is essential for slowing the spread of HIV infection. Carefully designed studies among heterosexual couples in which one partner is HIV positive and the other is not demonstrate that latex condoms provide a high level of protection against HIV.[9, 21]

Persons in some populations, especially sexually active young persons, may experience problems in obtaining access to condoms because of several factors, including cost, convenience, and embarrassment. The lack of readily accessible condoms may also be a significant barrier to consistent use. To eliminate this barrier, many local communities actively support programs that make condoms available to populations most vulnerable to HIV infection, including sexually active young persons. Research shows that providing access to condoms can increase their use among sexually active young persons. Research also clearly demonstrates that—despite fears to the contrary—young persons who participate in comprehensive HIV prevention programs which include approaches to ensure access to condoms are no more likely to initiate or increase sexual activity than other young persons.

In addition to access, the correct and consistent use of condoms is an issue for many young females, some of whom are having intercourse with older males. Young females often are limited by intimidation or threats of mistrust by their partners if they suggest condom use. Knowledge of effective negotiating skills is another critical element of increased condom use.

13-7. (Developmental) Increase the number of HIV-positive persons who know their serostatus.

Potential data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

Advances in HIV prevention and treatment increase the importance of persons learning their HIV status. Estimates are that approximately 250,000 persons in the United States are unaware they were infected with HIV in 1998. HIV testing provides a critical avenue to reach persons at risk with prevention counseling and services as well as to link infected individuals with needed care and treatment services. Clearly, infected persons should be counseled about ways they can protect their own health and keep from infecting others. New treatments offer infected persons the promise of a longer, healthier life. For HIV-infected pregnant females, therapy is available to reduce the chance of transmitting HIV to their babies. Although the evidence still is not entirely clear, persons who are being treated successfully for HIV may be less likely to transmit the virus. Because the science is evolving, communicating the continuing need for infected persons, even those in treatment, to take steps to protect their partners is essential.[23]

13-8. Increase the proportion of substance abuse treatment facilities that offer HIV/AIDS education, counseling, and support.

Target: 70 percent.

Baseline: 58 percent of substance abuse treatment facilities offered HIV/AIDS education, counseling, and support in 1997.

Target setting method: 21 percent improvement.

Data source: Uniform Facility Data Set (UFDS), SAMHSA.

To date, more than one-third of all reported AIDS cases in the United States have occurred among injection drug users, their heterosexual sex partners, and children whose mothers were injection drug users or sex partners of injection drug users.[3]

Preventing drug use and providing treatment to stop drug use among persons already using drugs are the best ways to prevent drug-associated transmission of HIV. Among persons who inject drugs, reusing or sharing blood-contaminated injection equipment (particularly syringes) continues to play a substantial role in HIV transmission, as well as the transmission of hepatitis B and C and other bloodborne infections.

Needle and syringe exchange programs (NSEPs) can be an effective component of comprehensive community-based HIV prevention efforts.[24] Additionally, NSEPs can provide a pathway for linking injection drug users to other important services, such as risk-reduction counseling, drug treatment, and support services.

13-9. (Developmental) Increase the number of State prison systems that provide comprehensive HIV/AIDS, sexually transmitted diseases, and tuberculosis (TB) education.

Potential data source: Survey of HIV, STD, and TB Prevention in Correctional Facilities, CDC/National Institute of Justice.

Incarceration provides an environment in which early interventions and risk-reduction behaviors can be taught and reinforced over time. It also represents an opportunity to provide the education, support, and continuity of care needed when incarcerated persons are released and return to their home communities.

13-10. (Developmental) Increase the proportion of inmates in State prison systems who receive voluntary HIV counseling and testing during incarceration.

Potential data source: Survey of HIV, STD, and TB Prevention in Correctional Facilities, CDC and National Institute of Justice.

Although not standardized, State prison systems can provide access to treatment and care for persons infected with HIV. Early access to care reduces both immediate and long-term health care costs for correctional institutions and the community. This objective focuses on State systems because, in accordance with the Federal Bureau of Prisons guidance, all Federal correctional facilities are required to provide HIV testing to all inmates at some time prior to discharge. Continuing this practice is important. It is also important to provide HIV testing to inmates upon intake to allow for sufficient medical care and necessary followup. In addition, discharge planning and formal linkages with community-based HIV care should be offered to all HIV-positive inmates just prior to or upon release.

13-11. Increase the proportion of adults with tuberculosis (TB) who have been tested for HIV.

Target: 85 percent.

Baseline: 55 percent of adults aged 25 to 44 years with TB were tested for HIV in 1998.

Target setting method: Better than the best.

Data source: National TB Surveillance System, CDC, DTBE.

Adults Aged 25 to 44 Years With TB, 1998	**Tested for HIV** Percent
TOTAL	55
Race and ethnicity	
American Indian or Alaska Native	39
Asian or Pacific Islander	29
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	76
White	50
Hispanic or Latino	46
Not Hispanic or Latino	58
Black or African American	76
White	58
Gender	
Female	51
Male	58
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The rapid rate of progression from infection with TB bacteria to active TB disease among HIV-positive patients with *Mycobacterium tuberculosis* has been well documented. When State health departments compared their TB and AIDS registries, 27 percent of the TB cases reported in 1993-94 in adults aged 25 to 44 years had a match in the AIDS registry. However, estimates based on registry matches provide only a minimum estimate of coinfection.[25]

Early detection of HIV in TB patients also allows for early intervention and treatment that may prevent or delay the development of other HIV-related illnesses and AIDS. In fact, many persons diagnosed with TB who have immune system problems caused by HIV are unaware of their HIV status. TB patients receive HIV testing only after counseling and informed consent from the patient. Because testing is voluntary, some patients may decline HIV testing.

13-12. (Developmental) Increase the proportion of adults in publicly funded HIV counseling and testing sites who are screened for common bacterial sexually transmitted diseases (STDs) (chlamydia, gonorrhea, and syphilis) and are immunized against hepatitis B virus.

Potential data source: HIV Counseling and Testing Data Summary, CDC, NCHSTP.

Data indicate that the presence of other STDs substantially increases the risk of HIV transmission by making it easier both to get and to give HIV infection.[28, 30] Treating other STDs reduces the spread of HIV. U.S. STD rates are high, and STD clinical services are inadequate in the face of a changing HIV epidemic.[31]

STD vaccines can minimize the probability of infection. While vaccines for some STDs are in various stages of development, an effective vaccine for hepatitis B is widely available. Unfortunately, hepatitis B vaccine coverage remains low, especially in high-risk groups. The main reasons are a lack of awareness among health care providers, limited opportunity to reach high-risk youth in traditional health care settings, and limited financial support for widescale implementation of this intervention. Many persons requesting HIV counseling and testing, although not HIV infected, are nonetheless at high risk for acquiring sexually transmitted infections. Offering hepatitis B vaccine at sites screening for common STDs would take advantage of reaching high-risk persons who otherwise may not have access to immunization services.

13-13. Increase the proportion of HIV-infected adolescents and adults who receive testing, treatment, and prophylaxis consistent with current Public Health Service treatment guidelines.

Target and baseline:

Objective	Increase in HIV-Infected Persons Aged 13 Years and Older Receiving Testing, Treatment, and Prophylaxis Consistent With Current Public Health Service Guidelines	1997 Baseline	2010 Target
		Percent	
	Testing		
13-13a.	Viral load testing	76	95
13-13b.	Tuberculin skin testing (TST)	**Developmental**	
	Treatment		
13-13c.	Any antiretroviral therapy	92	95
13-13d.	Highly active antiretroviral therapy (HAART)	54	95

	Prophylaxis		
13-13e.	*Pneumocystis carinii* pneumonia (PCP) prophylaxis	95	95
13-13f.	*Mycobacterium avium* complex (MAC) prophylaxis	61	95
13-13g.	Pneumococcal vaccination	43	95

Note: Data from 11 cities and 9 States.

Target setting method: An improvement to the same percentage as that of the highest service (*Pneumocystis carinii* pneumonia prophylaxis at 95 percent).

Data source: Adult Spectrum of Disease (ASD) Surveillance Project, CDC, NCHSTP.

Estimated new cases of AIDS in adults and adolescents declined by 15 percent from 1996 to 1997. As new therapies continue to be developed and as people with HIV/AIDS live longer, HIV-infected persons need access to these life-enhancing treatments. Once individuals access care, they need to receive the most beneficial treatment possible. The survival benefits of antiretroviral therapy, PCP and MAC prophylaxis, and TB prophylaxis have been demonstrated for persons with HIV/AIDS who meet the criteria for these preventive therapies. (CD4+ testing is included as a standard of care in the Public Health Service treatment guidelines but is not included here because it already is provided to nearly 100 percent of individuals measured by this objective.)

Data from HIV and AIDS case surveillance continue to reflect the disproportionate impact of the epidemic on select populations, especially females, youth, and children. Everyone needs equal access to appropriate care and treatment services necessary to maintain a healthy life.

13-14. Reduce deaths from HIV infection.

Target: 0.8 death per 100,000 persons.

Baseline: 4.9 deaths from HIV infection per 100,000 persons in 1998 (preliminary data; age adjusted to the year 2000 population).

Target setting method: Better than the best.

Data source: National Vital Statistics System, CDC, NCHS.

Total Population, 1997*	Deaths Due to HIV Infection		
	13-14. Both Sexes	Females†	Males†
	Rate per 100,000		
TOTAL	6.1	2.7	9.7
Race and ethnicity			
American Indian or Alaska Native	2.5	DSU	3.8
Asian or Pacific Islander	0.9	DSU	1.7
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	26.6	13.9	41.7
White	3.5	1.0	6.0
Hispanic or Latino	8.9	3.5	14.2
Not Hispanic or Latino	5.9	2.6	9.3
Black or African American	27.3	14.3	42.9
White	2.8	0.7	4.9
Education level (aged 25 to 64 years)			
Less than high school	19.4	11.8	26.3
High school graduate	14.3	6.2	23.0
At least some college	5.8	1.6	10.1

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

†Data for females and males are displayed to further characterize the issue.

The impact of new combination drug therapies first was reported in 1997 when deaths attributable to HIV infection were down 44 percent from the first 6 months of 1996, compared with the first 6 months of 1997. These surveillance data suggest that not only are new therapies delaying progression from AIDS to death, but, with early diagnosis and treatment, these therapies also are helping to delay the progression from HIV infection to an AIDS diagnosis for many persons.

13-15. (Developmental) Extend the interval of time between an initial diagnosis of HIV infection and AIDS diagnosis in order to increase years of life of an individual infected with HIV.

Potential data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

This objective is meant to indicate which populations are not benefiting from current treatment therapies and where to direct resources. HIV-infected persons should be identified at the earliest possible opportunity and referred to appropriate medical, social, and preventive services that may preserve their health, help them avoid opportunistic illnesses, reduce sexual and drug-use behaviors that may spread HIV, and generally extend the quality of their lives. For HIV-infected persons to benefit from treatment advances, HIV counseling and testing programs must facilitate an early diagnosis of HIV infection. All persons should have equal access to appropriate care and treatment services necessary for maintaining a healthy life.

13-16. (Developmental) Increase years of life of an HIV-infected person by extending the interval of time between an AIDS diagnosis and death.

Potential data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

This objective provides insight into which population groups lack or fail to respond to treatment. To sustain reductions in deaths due to HIV infection, access to treatment and care is necessary. Targeting prevention efforts at groups disproportionately affected also is important.

13-17. (Developmental) Reduce new cases of perinatally acquired HIV infection.

Potential data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

Perinatal transmission of HIV accounts for virtually all new HIV infections in children. Through 1993, an estimated 15,000 HIV-infected children were born to HIV-positive women in the United States. As of June 1998, 8,280 AIDS cases had been reported in children under age 13 years in the United States. Perinatally acquired AIDS cases have been reported from 48 States, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands.[3, 22]

The National Institutes of Health sponsored an AIDS clinical trial, ACTG-076, after demonstrating that the risk of perinatal HIV transmission could be reduced by as much as two-thirds with the use of zidovudine therapy. This therapy was given to HIV-positive pregnant females during pregnancy and childbirth and for their newborns for 6 weeks after birth.[21] Additional research confirmed that routine and universal counseling and voluntary testing, combined with zidovudine therapy, are highly effective in preventing HIV.[21] In addition, recently completed and ongoing research suggests that other antiretroviral agents also can reduce significantly maternal-infant HIV transmission. These additional therapeutic options should increase the opportunity to intervene to reduce perinatal HIV transmission. Substantial declines in perinatal AIDS cases have been reported. Estimated new cases of pediatric AIDS declined from 947 in 1992 to 225 in 1998.[3]

Even though these prevention efforts are proving to be effective in reducing perinatal HIV transmission, the continued number of new cases of perinatally acquired HIV infection among infants indicates an ongoing risk of perinatal transmission and underscores the need for strategies to ensure that HIV-infected females have access to and receive adequate prenatal care and timely HIV counseling and voluntary testing, gain access to HIV-related care and services, receive chemoprophylaxis to reduce perinatal transmission, and avoid breastfeeding. This objective will remain developmental until all States extend their surveillance systems to include HIV.

Related Objectives From Other Focus Areas

7. Educational and Community-Based Programs

7-2. School health education

9. Family Planning

9-10. Pregnancy prevention and sexually transmitted disease protection

14. Immunization and Infectious Diseases

14-11. Tuberculosis

14-13. Treatment for high-risk persons with latent tuberculosis infection

20. Occupational Safety and Health

20-10. Needlestick injuries

25. Sexually Transmitted Diseases

25-8. Heterosexually transmitted HIV infection in women

25-11. Responsible adolescent sexual behavior

25-17. Screening of pregnant women

Terminology

(A listing of all acronyms and abbreviations used in this publication appears Appendix K.)

AIDS: Acquired immunodeficiency syndrome, the most severe phase of infection with the human immunodeficiency virus (HIV). Persons infected with HIV are said to have AIDS when they get certain opportunistic infections or when their CD4+ cell count drops below 200.

CD4+ cell (also known as T helper cell): A type of T cell found in the blood that is involved in protecting the body against infections. CD4+ cells normally orchestrate the immune response, signaling other cells in the immune system to perform their special disease-fighting functions.

CD4+ cell count: A measure of the number of CD4+ cells present in the blood. Because HIV infection kills CD4+ cells, CD4+ cell count is used to track the progress of HIV infection.

Cost-effective: Indicates that the cost of a particular intervention compares favorably to life-saving interventions associated with other diseases.

Cost-saving: Indicates that a particular intervention averts health care costs in excess of the cost of the intervention.

HIV (human immunodeficiency virus): A virus that infects and takes over certain cells of the immune system that are important in fighting disease.

HIV antiretrovirals: Drugs, such as zidovudine (AZT) and saquinavir, designed to attack HIV and prevent it from multiplying.

HAART (highly active antiretroviral therapy): Aggressive anti-HIV treatment usually including a combination of drugs called protease inhibitors and reverse transcriptase inhibitors whose purpose is to reduce viral load infection to undetectable levels.

***Mycobacterium avium* complex (MAC):** Bacteria that cause disease in individuals who have weakened immune systems and one of the opportunistic infections that define AIDS.

Opportunistic infections: Infections that take advantage of the opportunity offered when a person's immune system has been weakened by HIV infection. At least 25 medical conditions, including bacterial, fungal, and viral infections and certain types of cancer, are associated with HIV infection.

***Pneumocystis carinii* pneumonia (PCP):** A type of pneumonia that strikes individuals who have weakened immune systems.

Prevalence: A proportion of persons in a population who are infected, at a specified point in time or over a specified period of time, with HIV.

Prophylaxis: Measures designed to prevent the spread of disease and preserve health; protective or preventive treatment.

Prophylactic: Something that guards against or prevents disease.

Protease: An enzyme that triggers the breakdown of proteins in the body. HIV's protease enzyme breaks apart long strands of viral protein into the separate proteins constituting the viral core and the enzymes it contains. HIV protease acts as new virus particles are budding off a cell membrane.

Protease inhibitor: A drug that binds to and blocks HIV protease from working, thus preventing the production of new functional viral particles.

Seronegative: Indicates that a person's blood lacks antibodies to a specific infectious agent, such as HIV.

Seropositive: Indicates that a person's blood contains antibodies to infections, such as HIV.

Serostatus: The result of a blood test for the antibodies that the immune system creates to fight specific diseases.

Universal infection control precautions: Guidelines and procedures to protect health care workers from exposure to infection from blood and other body fluids.

References

1. Centers for Disease Control and Prevention (CDC). Kaposi's sarcoma and pneumocystis pneumonia among homosexual men—New York City and California. *Morbidity and Mortality Weekly Report* 30(25):305-308, 1981.

2. CDC. Update on acquired immune deficiency syndrome (AIDS)—United States. *Morbidity and Mortality Weekly Report*, 31(37):507-514, 1982.

3. CDC. *HIV/AIDS Surveillance Report*, Year end 1998. Vol. 10, No. 2, 1999.

4. Karon, J.M.; Rosenberg, P.S.; McQuillan, G.; Khare, M.; Gwinn, M.; and Petersen, L.R. Prevalence of HIV infection in the United States, 1984-1992. *Journal of the American Medical Association* 276(2):126-131, 1996.

5. CDC. Update: Trends in AIDS incidence, deaths, and prevention—United States, 1996. *Morbidity and Mortality Weekly Report* 46(8):165-173, 1997.

6. CDC. Current Trends Update: Acquired Immunodeficiency Syndrome (AIDS)—United States. *Morbidity and Mortality Weekly Report* 32(52):688-691, 1984.

7. CDC. CDC guidelines for national human immundeficiency virus case surveillance, including monitoring for human immunodeficiency virus infection and acquired immunodeficiency syndrome. *Morbidity and Mortality Weekly Report* 48(RR-13), 1999.

8. Holtgrave, D.R., and Pinkerton, S.D. Updates of Cost of Illness and Quality of Life Estimates for Use in Economic Evaluations of HIV Prevention Programs. *Journal of Acquired Immune Syndrome and Human Retrovirology* 16(1):54-62, 1997.

9. Sweeney, D.A.; Fleming, P.L.; Karon, J.M.; and Ward, J.W. A minimum estimate of the number of living HIV-infected persons confidentially tested in the United States. [Abstract 1-16] Presented at the Interscience Conference on Antimicrobial Agents and Chemotherapy in Toronto, Canada.

10. Hoyert, D.L.; Kochanek, K.D.; and Murphy, S.L. Births and deaths: final data for 1997. *National Vital Statistics Report*, 47(19). Hyattsville,

MD: National Center for Health Statistics, 1999.

11. CDC. Update: Trends in AIDS incidence—United States, 1996. *Morbidity and Mortality Weekly Report* 46(37):861-867, 1997.

12. CDC. *HIV/AIDS Surveillance Report. 2nd quarter 1993*, Vol. 5, No. 4, 1994.

13. CDC. *HIV/AIDS Surveillance Report Mid Year 1999*. Vol. 11, No. 1, 1999.

14. CDC. *HIV/AIDS Surveillance Report, Year End 1997*. Vol. 9, No. 2, 1997.

15. CDC. Update on acquired immune deficiency syndrome (AIDS) among patients with hemophilia A. *Morbidity and Mortality Weekly Report* 31(48):644-652, 1982.

16. CDC. Possible transfusion-associated acquired immune deficiency syndrome (AIDS)—California. *Morbidity and Mortality Weekly Report* 31(48):652-654, 1982.

17. CDC. Prevention of acquired immune deficiency syndrome (AIDS): Report of inter-agency recommendations. *Morbidity and Mortality Weekly Report* 32 (8):101-104, 1983.

18. CDC. Acquired immunodeficiency syndrome (AIDS): Precautions for health-care workers and allied professionals. *Morbidity and Mortality Weekly Report* 32(30):450-452, 1983.

19. CDC. Provisional public health service inter-agency recommendations for screening donated blood and plasma for antibody to the virus causing acquired immunodeficiency syndrome. *Morbidity and Mortality Weekly Report* 34(1):1-5, 1985.

20. CDC. Recommendations for preventing transmission of infection with human T-lymphotropic virus III/lymphadenopathy-associated virus in the workplace. *Morbidity and Mortality Weekly Report* 34(45):681-686, 691-696, 1985.

21. CDC, Public Health Service Task Force. Recommendations for the use of antiretroviral drugs in pregnant women infected with HIV-1 for maternal health and for reducing perinatal HIV-1 transmission in the United States. *Morbidity and Mortality Weekly Report* 47(RR-2), 1998.

22. CDC. Update: Perinatally acquired HIV/AIDS—United States, 1997. *Morbidity and Mortality Weekly Report* 46(46):1086-1092, 1997.

23. CDC. Update: Barrier Protection Against HIV Infection and Other Sexually Transmitted Diseases. *Morbidity and Mortality Weekly Report* 42(30):589-591, 1993.

24. Institute of Medicine. The Effects of Needle Exchange Programs. In: Norman, J.; Vlahov, D.; Moses, L. (eds.). *Preventing HIV Transmission: The Role of Sterile Needles and Bleach*. Washington, DC: National Academy Press, 1995.

25. CDC. Prevention and treatment of tuberculosis among persons with human immunodeficiency virus: Principles of therapy and revised recommendations. *Morbidity and Mortality Weekly Report* 47(RR-20), 1998.

26. Kamb, M.L.; Fishbein, M.; Douglas, Jr., J.M.; Rhodes, F.; Rogers, J.; Bolan, G.; Zenilman, J.; Hoxworth, T.; Malotte, C.K.; Iatesta, M.; Kent, C.; Lentz, A.; Graziano, S.; Byers, R.H.; and Peterman,T.A. Efficacy of risk-reduction counseling to prevent human immunodeficiency virus and sexually transmitted diseases: a randomized controlled trial. Project RESPECT Study Group. *Journal of the American Medical Association* 280(13):1161-1167, 1998.

27. CDC. HIV prevention through early detection and treatment of other sexually transmitted diseases. United States: Recommendations of the advisory committee for HIV and STD prevention. *Morbidity and Mortality Weekly Report* 47(RR-12):175-219, 1998.

28. Wasserheit, J. Epidemiological Synergy. Interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases. *Sexually Transmitted Diseases* 19(2):61-77, 1992.

29. Joint United Nations Programme on HIV/AIDS. *The UNAIDS Report*., 1999.

30. Fleming, D.T., and Wasserheit, J.N. From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. *Sexually Transmitted Infections* 75(1):3-17, 1999.

31. Institute of Medicine. Current STD Related Services. In: *The Hidden Epidemic: Confronting Sexually Transmitted Diseases*. Washington, DC: National Academy Press, 175-219, 1997.

14

Immunization and Infectious Diseases

Lead Agency: Centers for Disease Control and Prevention

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Goal

Prevent disease, disability, and death from infectious diseases, including vaccine-preventable diseases.

Overview

Infectious diseases remain major causes of illness, disability, and death. Moreover, new infectious agents and diseases are being detected, and some diseases considered under control have reemerged in recent years. In addition, antimicrobial resistance is evolving rapidly in a variety of hospital- and community-acquired infections. These trends suggest that many challenges still exist in the prevention and control of infectious diseases.

Issues

Between 1980 and 1992, the number of deaths from infectious diseases rose 58 percent in the United States. Even when human immunodeficiency virus (HIV)-associated diagnoses are removed, deaths from infectious diseases still increased 22 percent during this period. (See Focus Area 13. HIV.) Considered as a group, three infectious diseases—pneumonia, influenza, and HIV infection—constituted the fifth leading cause of death in the United States in 1997.

The direct and indirect costs of infectious diseases are significant. Every hospital-acquired infection adds an average of $2,100 to a hospital bill. Bloodstream infections result in an average of $3,517 in additional hospital charges per infected patient because the patient stay averages an additional 7 days. A typical case of Lyme disease diagnosed in the early stages incurs about $174 in direct medical treatment costs. Delayed diagnosis and treatment, however, can result in complications that cost from $2,228 to $6,724 per patient in direct medical costs in the first year alone.[1]

Infectious diseases also must be considered in a global context. Increases in international travel, importation of foods, inappropriate use of antibiotics on humans and animals, and environmental changes multiply the potential for worldwide epidemics of all types of infectious diseases. International cooperation and collaboration on disease surveillance, response, research, and training are essential to prevent or control these epidemics. Actions taken to improve health in one country affect the health of people worldwide.

Vaccines. Vaccines are biological substances that interact with the person's immune system to produce an immune response identical to that produced by the natural infection.

Vaccines can prevent the debilitating and, in some cases, fatal effects of infectious diseases. Vaccines help to eliminate the illness and disability of polio,[2] measles, and rubella.[3] However, the organisms that cause these diseases have not disappeared. Rather, they have receded and will reemerge if the vaccination coverage drops. The serious health burden of vaccine-preventable diseases (VPDs) is evident from the measles resurgence of 1989 to 1991, resulting in more than 55,000 cases, 11,000 hospitalizations, 120 deaths, and $100 million in direct medical care costs.[4, 5, 6, 7]

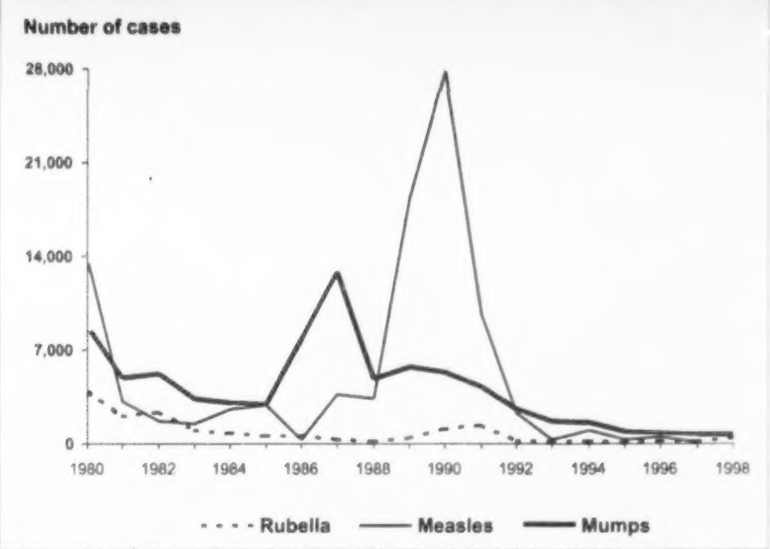
Vaccines protect more than the vaccinated individual. They also protect society. When vaccination levels in a community are high, the few who cannot be vaccinated—such as young children and persons with contraindications to vaccination—often are indirectly protected because of group immunity (in other words, they live among vaccinated persons who may offer protection from exposure to disease).

Vaccines provide significant cost benefits. Three childhood vaccines—diphtheria, tetanus toxoids, and acellular pertussis vaccine (DTaP); measles, mumps, and rubella vaccine (MMR); and *Haemophilus influenzae* type b (Hib) vaccine—result in substantial direct medical savings for each dollar spent to vaccinate children against these diseases. Varicella vaccine saves roughly 90 cents in direct medical costs for every dollar invested. Consideration of indirect savings—prevention of work loss by parents to care for ill children, prevention of death and therefore lost earnings from disability—shows that vaccines routinely recommended for children are highly cost saving. Savings range from $24 for every dollar spent on DTaP to $2 for the more recently approved Hib vaccine.[8]

Trends

Significant progress has been made in reducing indigenous (not imported) cases of VPDs. The occurrence of many VPDs is at or near record-low levels. Most diseases have been reduced by more than 95 percent from peak prevaccine levels.[9]

In 1998, overall vaccination coverage for children aged 19 to 35 months was at record-high levels.[10] Antigen-specific rates have shown striking progress since 1992.[11] For example, coverage for three or more doses of polio vaccine increased from 72 percent to 91 percent, and coverage for three or more doses of Hib vaccine increased from 28 percent to 93 percent. Significant achievements also were made among racial and ethnic groups in that most of the 1996 goals for the Childhood Immunization Initiative were met for individual vaccines.[12] Since 1989, vaccination requirements have been expanded for schools and day care settings.[11] As of the 1998-99 school year, all States required vaccination against diphtheria, measles, and polio. Similarly, all States and the District of Columbia now require vaccination for day care.[13]



Vaccine-Preventable Diseases: Number of Cases of Rubella, Measles, and Mumps
(By year, 1980–98)

Source: National Notifiable Diseases Surveillance System (NNDSS), CDC, EPO, 1980–98.

In 1996, a vaccine against hepatitis A virus (HAV) was licensed that has the potential to reduce the health burden of this disease as well. The vaccine is now recommended primarily for high-risk groups. To decrease hepatitis A virus transmission, universal vaccination was recommended in 1999 for children who lived in States where the rate of new cases was greater than two times the national average.[14]

Financing for childhood vaccinations has improved significantly as a result of two initiatives—Vaccines for Children and the Children's Health Insurance Program that cover children on Medicaid, uninsured children, and Native American and Alaskan Native children. Underinsured children who receive vaccinations at Federal and rural health clinics also are covered. Because they promote free vaccines for children, these programs eliminate vaccine cost as a barrier to childhood vaccination. Also, the Public Health Service Act, Section 317 immunization grant program and State funds provide free vaccines for children not covered by other programs.

Adult vaccination rates continued to increase over the decade. Influenza vaccine coverage rates were up from 33 percent in 1989 to 63 percent in 1997, and pneumococcal vaccine coverage rates were up from 15 percent to 43 percent. Despite these increases, coverage rates for certain racial and ethnic groups remain substantially below the general population.[15]

Invasive diseases invade the bloodstream and cause distant infection. The most common types of invasive disease caused by *Haemophilyus influenzae* type b (Hib) are meningitis, epiglottitis, pneumonia, certain types of arthritis, and cellulitis. Conjugate vaccines—licensed in 1990 for use beginning at age 2 months—are highly effective in protecting against Hib meningitis and other invasive diseases caused by Hib. These vaccines also interrupt spread of the disease-causing organism by affecting the organism's nasopharyngeal colonization. New cases of Hib meningitis declined by 96 percent from 1987 to 1995.[16] During that period, bacterial meningitis caused by one of the five leading agents (*Haemophilus influenzae*, *Streptococcus pneumoniae*, *Neisseria meningitidis*, group B *Streptococcus* [GBS], and *Listeria monocytogenes*) fell by 55 percent. Bacterial meningitis was traditionally a disease of childhood, infecting children with a median age of 15 months in 1986.[17] Following the dramatic reduction in Hib meningitis, which primarily occurs among children under age 2 years, the median age of persons with the disease shifted to 25 years in 1995.[17] The success of conjugate vaccines against Hib disease has stimulated efforts to develop conjugate vaccines for other pathogens, including *Streptococcus pneumoniae*, *Neisseria meningitidis*, and GBS. Conjugate vaccines against these three agents are being tested in clinical trials. The success of bacterial meningitis vaccines suggests comparable results may be achieved for other causes of meningitis, sepsis, and pneumonia as their conjugate vaccines become used more routinely in target populations.

Disparities

The updated *Preventing Emerging Infectious Diseases: A Strategy for the 21st Century* focuses on certain emerging infectious disease issues and on particular groups of people at risk.[18] Historically, childhood vaccination rates have been lower in certain racial and ethnic populations, compared to the white population. Vaccination rates for preschool children in racial and ethnic groups with lower vaccination rates, however, have been increasing at a more rapid rate, significantly narrowing the gap.

Efforts need to be intensified, particularly to increase vaccination coverage for children living in poverty. Substantial numbers of undervaccinated children remain in some areas, particularly the large urban areas with traditionally underserved populations, creating great concern because of the potential for outbreaks of disease.

In addition to very young children, many adults are at increased risk for VPDs. Vaccination against pneumococcal infections and influenza among persons aged 65 years and over has increased slightly for African Americans and Hispanics. The coverage in these groups, however, remains substantially below the general population. For example, influenza vaccination rates for whites were 66 percent in

1997, while for African Americans and Hispanics, rates were only 45 and 53 percent, respectively. In September 1997, the Department of Health and Human Services approved a plan to improve adult vaccination rates and reduce disparities among racial and ethnic groups.[19] The elimination of disparities, however, may require further interventions in particular geographic, cultural, or racial and ethnic populations.

Opportunities

A coordinated strategy is necessary to understand, detect, control, and prevent infectious diseases. Such a strategy will protect the gains achieved in life expectancy in the 20th century resulting from control and prevention of infectious diseases and ensure further improvements in the 21st century.

Priority issues include antimicrobial resistance, foodborne and waterborne diseases, vector-borne and zoonotic diseases, diseases transmitted through transfusion of blood or blood products, and vaccine development and use. Some of these diseases and pathogens were unknown 20 years ago. Others are reemergent problems once thought under control. At-risk populations include persons with impaired host defenses; pregnant women and newborns; travelers, immigrants, and refugees; older adults; or other persons identified by the Advisory Committee on Immunization Practices (ACIP).

The major strategies to protect people from VPDs are the following:[20]

- Improving the quality and quantity of vaccination delivery services.
- Minimizing financial burdens for needy persons.
- Increasing community participation, education, and partnership.
- Improving monitoring of disease and vaccination coverage.
- Developing new or improved vaccines and improving vaccine use.

These strategies include a broad range of interventions for children, such as entry requirements for school and promoting the Vaccines for Children and Children's Health Insurance Program, in which eligible children are vaccinated in their medical home. Assessment of vaccination coverage of persons served at individual clinics and provider offices with feedback of the results to the individual providers to guide them in improving performance also is important. The exchange of information on coverage assessment among colleagues stimulates a friendly competition to achieve better vaccination levels.[21] Populations at risk of undervaccination can be reached through linkages with other programs, including Women, Infants, and Children (WIC) services.[22] State and local registries that enroll children and record their vaccinations are valuable tools for helping parents and providers to identify immunization needs of individual children, assessing coverage in individual practices, and generating communitywide estimates.[23]

In the United States, most VPDs occur among adults. Pneumococcal disease and influenza account for more than 30,000 deaths annually, most of which occur in elderly persons. Studies have consistently shown that focusing efforts to improve coverage on health care providers, as well as health care systems, is the most effective means of raising vaccine coverage in adults. For example, all health care providers should assess routinely the vaccination status of their patients. Likewise, health plans should develop mechanisms for assessing the vaccination status of their participants. Also, nursing home facilities and hospitals should ensure that policies exist to promote vaccination.

Since no vaccine is completely safe, vaccine safety research and monitoring are necessary to identify and minimize vaccine-related injuries. As programs continue to reduce the new cases of VPDs, concerns about vaccine adverse events have emerged, posing a threat to public acceptance of vaccines. Knowing the safety profile of vaccines is essential to assess accurately the risks and benefits, to formulate appropriate vaccine recommendations, and to address public concerns.

Interim Progress Toward Year 2000 Objectives

Significant progress has been made in reaching the Healthy People 2000 objectives. Reductions in indigenous cases of VPDs have been dramatic. For example, measles was reduced from a 1988 baseline of 3,396 indigenous cases to a total of only 100 in 1998. Substantial progress also has been made in reducing hepatitis B virus (HBV) transmission. The vaccine against hepatitis A provides the opportunity to reduce the burden of this disease. Achieving the year 2000 objective to reduce new cases of bacterial meningitis was entirely due to the introduction of Hib conjugate vaccines for infants.[24] In 1998, individual coverage levels for children aged 19 to 35 months were at record high levels. For example, individual coverage levels for three or more doses of polio, three or more doses of diphtheria/tetanus/acellular pertussis, one or more doses of measles/mumps/rubella, and three or more does of Hib vaccines were each at or above 91 percent. Progress has also been made in expanding immunization requirements for schools and day care settings. Data for viral hepatitis indicate that targets for hepatitis B and C were met in the early 1990s.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Immunization and Infectious Diseases

Goal: Prevent disease, disability, and death from infectious diseases, including vaccine-preventable diseases.

Number	Objective
Diseases Preventable Through Universal Vaccination	
14-1	Vaccine-preventable diseases
14-2	Hepatitis B in infants and young children
14-3	Hepatitis B in adults and high-risk groups
14-4	Bacterial meningitis in young children
14-5	Invasive pneumococcal infections
Diseases Preventable Through Targeted Vaccination	
14-6	Hepatitis A
14-7	Meningococcal disease
14-8	Lyme disease
Infectious Diseases and Emerging Antimicrobial Resistance	
14-9	Hepatitis C
14-10	Identification of persons with chronic hepatitis C
14-11	Tuberculosis
14-12	Curative therapy for tuberculosis
14-13	Treatment for high-risk persons with latent tuberculosis infection
14-14	Timely laboratory confirmation of tuberculosis cases
14-15	Prevention services for international travelers
14-16	Invasive early-onset group B streptococcal disease
14-17	Peptic ulcer hospitalizations
14-18	Antibiotics prescribed for ear infections
14-19	Antibiotics prescribed for colds
14-20	Hospital-acquired infections
14-21	Antimicrobial use in intensive care units

Vaccination Coverage and Strategies

14-22	Universally recommended vaccination of children aged 19 to 35 months
14-23	Vaccination coverage for children in day care, kindergarten, and first grade
14-24	Fully immunized children aged 19 to 35 months
14-25	Providers who measure childhood vaccination coverage levels
14-26	State/community population-based immunization registries for children
14-27	Vaccination coverage among adolescents
14-28	Hepatitis B vaccination among high-risk groups
14-29	Flu and pneumococcal vaccination of high-risk adults

Vaccine Safety

14-30	Adverse events from vaccinations
14-31	Active surveillance for vaccine safety

Diseases Preventable Through Universal Vaccination

14-1. Reduce or eliminate indigenous cases of vaccine-preventable disease.

Target and baseline:

Objective	Reduction in Vaccine-Preventable Diseases	1998 Baseline	2010 Target
		Number of Cases	
14-1a.	Congenital rubella syndrome	7	0
14-1b.	Diphtheria (persons under age 35 years)	1	0
14-1c.	*Haemophilus influenzae* type b* (children under age 5 years)	253	0
14-1d.	Hepatitis B (persons aged 2 to 18 years)	945†	9
14-1e.	Measles	74	0
14-1f.	Mumps	666	0
14-1g.	Pertussis (children under age 7 years)	3,417	2,000
14-1h.	Polio (wild-type virus)	0	0
14-1i.	Rubella	364	0
14-1j.	Tetanus (persons under age 35 years)	14	0
14-1k.	Varicella (chicken pox)	4 million‡	400,000

*Includes cases with type b and unknown serotype.

†Estimated hepatitis B cases for 1997.[25]

‡Data based on average from 1990-94.

Target setting method: Total elimination for congenital rubella syndrome, diphtheria, *Haemophilus influenzae* type b, measles, mumps, polio, rubella, and tetanus; 41 percent improvement for pertussis; 99 percent improvement for hepatitis B; and 99 percent improvement for varicella.

Data sources: National Notifiable Disease Surveillance System (NNDSS), CDC, EPO; National Congenital Rubella Syndrome Registry (NCRSR), CDC, NIP—congenital rubella syndrome; National Health Interview Survey (NHIS), CDC, NCHS—varicella.

Highly effective vaccines are used routinely in childhood for prevention of measles, mumps, rubella, varicella, diphtheria, tetanus, pertussis, polio, hepatitis B, and Hib invasive disease.[26] Vaccinations for these diseases have reduced reported cases of most VPDs common in childhood to record-low levels.[10,25,27] Measles transmission probably was interrupted multiple times in the United States since 1993.[28,29,30] With a high level of coverage of two doses of measles, mumps, and rubella vaccine, interruption of the spread of both rubella and mumps is feasible.[31,32] Recent outbreaks of rubella and a number of cases of congenital rubella syndrome, however, highlight the importance of ensuring rubella immunity particularly in women of child-bearing age and foreign-born adults.[33] Polio has been eliminated in the United States due to high vaccination coverage. Although polio is expected to be eradicated globally, surveillance for cases of the disease will continue. Because of widespread vaccination, reported cases of diphtheria are near zero.[34,35] Tetanus toxoid is highly effective, but with the absence of group immunity, all persons must be vaccinated to achieve the goal of zero cases.[36] Pertussis among children will be reduced by increasing vaccination coverage, but the disease will continue to occur because the organism circulates among older age groups, and the vaccine is not 100 percent effective.[37,38]

Hepatitis B virus (HBV) infection will be reduced greatly as the age groups covered by universal infant and adolescent vaccination efforts enter young adulthood, a period when the risk of HBV infection increases.

Conjugate vaccines for prevention of *Haemophilus influenzae* type b are highly effective and have led to near elimination of invasive Hib disease.[10,39] Further reductions in new cases are anticipated as Hib vaccine coverage increases.

The licensure of new vaccines against common diseases that are not reportable diseases, such as varicella, has created new challenges for surveillance and evaluation. Without national reporting, documenting the impact of national and State vaccination programs and measuring progress for reducing indigenous cases of disease are difficult.[40] However, with an increase in vaccination coverage and a decline in the number of new cases, varicella is expected to become a reportable condition.

14-2. Reduce chronic hepatitis B virus infections in infants and young children (perinatal infections).

Target: 400 infections.

Baseline: 1,682 chronic hepatitis B virus infections in children under age 2 years in 1995.

Target setting method: 76 percent improvement.

Data source: Perinatal Hepatitis B Prevention Program, CDC, NCID.

Each year, 16,000 to 18,000 children in the United States are born to mothers infected with HBV.[41] Without prevention programs, about 8,000 of these infants would become infected with HBV. Ninety-five percent of the infections, however, are preventable through appropriate maternal screening and infant care.[42]

Screening pregnant women during an early prenatal visit is essential to identify those who are infected. Women at high risk should be retested late in pregnancy. In 1997, 14 States had laws or regulations to ensure such screening.

To be maximally effective, steps to prevent transmission of HBV to infants born to mothers who are infected must begin as soon as the child is born. Such infants should receive a first dose of hepatitis B vaccine within 12 hours of birth, along with hepatitis B immune globulin (HBIG), and two more doses of vaccine by age 6 months. Children need to be tested between the ages of 12 and 15 months to ensure that they are not infected and have developed immunity to the virus.

14-3. Reduce hepatitis B.

Target and baseline:

Objective	Reduction in Hepatitis B	1997 Baseline	2010 Target
		Rate per 100,000	
	Adults		
14-3a.	19 to 24 years	24.0	2.4
14-3b.	25 to 39 years	20.2	5.1
14-3c.	40 years and older	15.0	3.8
	High-risk groups	Number of Cases	
14-3d.	Injection drug users	7,232	1,808
14-3e.	Heterosexually active persons	15,225	1,240
14-3f.	Men who have sex with men	7,232	1,808
14-3g.	Occupationally exposed workers	249	62

Target setting method: Better than the best for 14-3a, 14-3b, and 14-3c; 75 percent improvement for 14-3d, 14-3f, and 14-3g; 92 percent improvement for 14-3e.

Data sources: National Notifiable Disease Surveillance System (NNDSS), CDC, EPO; Sentinel Counties Study of Viral Hepatitis, CDC, NCID.

Select Age Groups, 1997	Hepatitis B Cases		
	14-3a. Aged 19 to 24 Years	**14-3b. Aged 25 to 39 Years**	**14-3c. Aged 40 Years and Older**
	Rate per 100,000		
TOTAL	24.0	20.2	15.0
Race and ethnicity			
American Indian or Alaska Native	16.0	20.1	10.9
Asian or Pacific Islander	42.2	30.4	33.2
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	48.3	32.5	27.6
White	10.4	10.2	7.4
Hispanic or Latino	16.9	16.0	18.1
Not Hispanic or Latino	25.2	20.7	14.8
Black or African American	50.6	34.1	28.4
White	10.3	10.2	7.1
Gender			
Female	24.1	15.4	9.4
Male	22.5	24.1	20.8
Family income level			
Poor	DNC	DNC	DNC
Near poor	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

To reduce HBV transmission in the United States by 2010, vaccination programs must be targeted to adolescents and adults in high-risk groups. The primary means of achieving high levels of vaccination coverage in groups with behavioral risk factors for HBV infection is to identify settings where these individuals can be vaccinated. Such sites include clinics that treat sexually transmitted diseases, correctional facilities (juvenile detention facilities, prisons, jails), drug treatment clinics, and community-based HIV prevention sites. The primary means of achieving high levels of vaccine coverage among household and sex contacts of the estimated 1.25 million persons in the United States with chronic HBV infection are programs that offer followup for all HbsAg-positive persons reported to State and local health departments.

Routine infant vaccination eventually will produce a highly immune population sufficient to eliminate HBV transmission in the United States. However, high rates of acute hepatitis B continue to occur, with an estimated 65,000 cases in 1996. Most cases occur in young adult risk groups, including persons with a history of multiple sex partners, men who have sex with men, injection drug users, incarcerated persons, and household and sex contacts of persons with HBV infection. Investigation of reported cases of acute hepatitis B indicates that as many as 70 percent of these individuals previously had been seen in settings such as drug treatment clinics, correctional facilities, or clinics for the treatment of STD where they could have received vaccine.

14-4. Reduce bacterial meningitis in young children.

Target: 8.6 new cases per 100,000 children aged 1 through 23 months.

Baseline: 13.0 new cases of bacterial meningitis per 100,000 children aged 1 through 23 months in 1998.

Target setting method: 34 percent improvement. (Better than the best will be used when data are available.)

Data source: Active Bacterial Core Surveillance (ABCs), CDC, NCID.

Children Aged 1 Through 23 Months, 1998	New Cases of Bacterial Meningitis Rate per 100,000
TOTAL	13.0
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	25.9
White	11.0

Children Aged 1 Through 23 Months, 1998	New Cases of Bacterial Meningitis Rate per 100,000
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	13.0
Male	13.1
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Children aged 1 month to 2 years have higher rates of meningitis than older children. New vaccines for pneumococcal disease, including pneumococcal meningitis, may help protect young children. Meningococcal conjugate vaccines are in clinical trials and may become available for widespread use before 2010, although it is not yet known whether they will target young children. Pneumococcal conjugate vaccines, modeled after the successful construction of Hib conjugate vaccines, are also in clinical trials. Before 2010, licensure and widespread use of these new products are expected.

14-5. Reduce invasive pneumococcal infections.

Target and baseline:

Objective	Reduction in Invasive Pneumococcal Infections	1997 Baseline	2010 Target
		Rate per 100,000	
	New invasive pneumococcal infections		
14-5a.	Children under age 5 years	76	46
14-5b.	Adults aged 65 years and older	62	42
	Invasive penicillin-resistant pneumococcal infections		
14-5c.	Children under age 5 years	16	6
14-5d.	Adults aged 65 years and older	9	7

Target setting method: Better than the best.

Data source: Active Bacterial Core Surveillance (ABCs), CDC, NCID; Arctic Investigations Program (for data on pneumococcal disease rates among Alaska Natives), CDC.

Select Age Groups, 1997	New Cases of Invasive Pneumococcal Infections		New Cases of Invasive Penicillin-Resistant Pneumococcal Infections	
	14-5a. Under Age 5 Years	14-5b. Aged 65 Years and Older	14-5c. Under Age 5 Years	14-5d. Aged 65 Years and Older
	Rate per 100,000			
TOTAL	76	62	16	9
Race and ethnicity				
American Indian or Alaska Native	DSU	DSU	DSU	DSU
Asian or Pacific Islander	58	DSU	DSU	DSU
Asian	DSU	DSU	DSU	DSU
Native Hawaiian and other Pacific Islander	DSU	DSU	DSU	DSU
Black or African American	154	83	20	9
White	63	61	17	9
Hispanic or Latino	59	43	7	DSU
Not Hispanic or Latino	DSU	DSU	DSU	DSU
Black or African American	DSU	DSU	DSU	DSU
White	DNC	DNC	DNC	DNC
Gender				
Female	69	61	14	9
Male	84	62	17	9
Family income level				
Poor	DNC	DNC	DNC	DNC
Near poor	DNC	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The number of invasive penicillin-resistant pneumococcal infections can be reduced by lowering the proportion of invasive pneumococcal infections due to drug-resistant strains or by decreasing invasive pneumococcal infections in general. The objectives for specific age groups address the key age groups at risk for invasive pneumococcal infections. Among children under age 5 years, promoting judicious antibiotic use may reverse the current trends toward increasing proportions of infections being caused by drug-resistant strains. For adults aged 65 years and older, licensure and widespread use of pneumococcal conjugate vaccines by 2010 could reduce dramatically all invasive pneumococcal infections, and judicious antibiotic use may have some impact on the proportion of pneumococcal infections caused by drug-resistant strains. In this age group, a much greater impact potentially is achievable through improved use of licensed 23-valent pneumococcal polysaccharide vaccine for the prevention of invasive pneumococcal disease. Increasing the use of this vaccine for elderly persons could have a beneficial impact on the rate of drug-resistant invasive pneumococcal infections.

Diseases Preventable Through Targeted Vaccination

14-6. Reduce hepatitis A.

Target: 4.5 new cases per 100,000 population.

Baseline: 11.3 new cases of hepatitis A per 100,000 population in 1997.

Target setting method: Better than the best.

Data source: National Notifiable Disease Surveillance System (NNDSS), CDC, EPO.

Total Population, 1997	New Hepatitis A Cases
	Rate per 100,000
TOTAL	11.3
Race and ethnicity	
American Indian or Alaska Native	23.1
Asian or Pacific Islander	4.6
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	6.0
White	8.1

Total Population, 1997	**New Hepatitis A Cases** Rate per 100,000
Hispanic or Latino	24.2
Not Hispanic or Latino	9.8
Black or African American	6.3
White	7.3
Gender	
Female	8.1
Male	12.8
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The health status objectives for HAV will not be achieved until a vaccination strategy is implemented that produces high levels of immunity in children. Children have the highest rates of hepatitis A and are a primary source for new infections in the community. In 1999, the Advisory Committee on Immunization Practices (ACIP) recommended routine hepatitis A vaccination for children living in States with consistently elevated rates of hepatitis A as the approach most likely to prevent and control transmission of HAV.[14] Hepatitis A vaccine is included in the Vaccines for Children Program. Incorporation of hepatitis A vaccine into the routine childhood vaccination schedule would facilitate implementation of these recommendations, but data are needed to determine the appropriate dose and timing of vaccination in the first or second year of life. Implementation of the recommendations also would be enhanced by the development of vaccines that combine HAV antigen with other antigens.

Although routine immunization of children is the approach most likely to decrease significantly the overall rates of hepatitis A in a community, it may take some time before the impact of implementing these programs is measurable. In the interim, persons in groups at high risk of HAV infection should be vaccinated routinely. These groups include:

- Illicit drug users.
- Men who have sex with men.
- Persons traveling to HAV-endemic countries (see objective 14-15).

- Persons with occupational risk of infection—that is, persons who work with HAV-infected primates or with HAV in a research laboratory. No other occupational groups have been shown to be at increased risk of exposure.

- Persons with chronic liver disease.

14-7. Reduce meningococcal disease.

Target: 1.0 new cases per 100,000 population.

Baseline: 1.3 new cases of meningococcal disease per 100,000 population in 1997.

Target setting method: Better than the best.

Data sources: Active Bacterial Core Surveillance (ABCs), Emerging Infection Program, CDC, NCID; National Notifiable Diseases Surveillance System (NNDSS), CDC, EPO.

Total Population, 1997	New Cases of Meningococcal Disease Rate per 100,000
TOTAL	1.3
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	1.9
White	1.2
Hispanic or Latino	DSU
Not Hispanic or Latino	DNC
Black or African American	DNC
White	DNC
Gender	
Female	1.2
Male	1.3

Total Population, 1997	New Cases of Meningococcal Disease Rate per 100,000
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The polysaccharide meningococcal vaccine currently available in the United States is recommended for certain high-risk groups (people with asplenia), for laboratory personnel routinely exposed to *Neisseria meningitidis*, and for travelers to regions where meningococcal disease is hyperendemic or epidemic (the African "meningitis belt"). Routine vaccination of civilians is not recommended because of its relative ineffectiveness in children under age 2 years (among whom risk of endemic disease is highest) and its relatively short duration of protection. The vaccine is useful for controlling serogroup C meningococcal epidemics; these account, however, for less than 5 percent of the cases of meningococcal disease that occur each year in the United States. The vaccine provides no protection against serogroup B meningococci, which account for approximately one-third of the disease overall in the United States.

New meningococcal conjugate vaccines against serogroups C and Y, which account for two-thirds of current disease, are now undergoing clinical trials. Soon they should be available for incorporation into routine childhood immunization as well as for vaccination of high-risk groups, possibly including college students. Similar to Hib conjugate vaccines, new meningococcal conjugate vaccines are expected to be effective in children.

Development and licensing of new serogroup B meningococcal vaccines will also help reduce meningococcal disease.

14-8. Reduce Lyme disease.

Target: 9.7 new cases per 100,000 population in endemic States.

Baseline: 17.4 new cases of Lyme disease per 100,000 population in 1992-96 (in endemic States of Connecticut, Delaware, Maryland, Massachusetts, Minnesota, New Jersey, New York, Pennsylvania, Rhode Island, and Wisconsin).

Target setting method: 44 percent improvement. (Better than the best will be used when data are available.)

Data source: National Notifiable Disease Surveillance System (NNDSS), CDC, EPO.

Total Population, 1992-96	New Cases of Lyme Disease Rate per 100,000
TOTAL	17.4
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DSU
Black or African American	DSU
White	DSU
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	DNA
Male	DNA
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

In 1991 a standardized case definition for Lyme disease was adopted by the Council of State and Territorial Epidemiologists. Since then, the number of reported cases of Lyme disease has increased from 8,257 in 1993 to 16,455 in 1996 because of increased surveillance as well as a true increase in new cases. From 1992 through 1996, 92 percent of cases were reported from 10 endemic States. New initiatives to prevent Lyme disease include the implementation of community-based prevention programs, host-targeted acaricides to reduce the numbers of vector ticks, and appropriate use of Lyme disease vaccine.

Infectious Diseases and Emerging Antimicrobial Resistance

14-9. Reduce hepatitis C.

Target: 1 new case per 100,000 population.

Baseline: 2.4 new cases of hepatitis C per 100,000 population in selected counties in 1996.

Target setting method: Better than the best.

Data source: Sentinel Counties Study of Viral Hepatitis, CDC, NCID.

Total Population, 1996	New Hepatitis C Cases
	Rate per 100,000
TOTAL	2.4
Race and ethnicity	
American Indian or Alaska Native	DNC
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DSU
White	3.0
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	2.0
Male	2.8

Total Population, 1996	New Hepatitis C Cases Rate per 100,000
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Data represent rates based on estimates from selected counties.

Hepatitis C virus (HCV) is the most common chronic bloodborne viral infection in the United States.[43] This virus is usually transmitted through large or repeated percutaneous exposures to blood—for example, through sharing of equipment between injection drug users. HCV infects persons of all ages, but most new cases are among young adults aged 20 to 39 years. The highest proportion of new cases is among whites, but the highest rates of new cases are among nonwhite racial and ethnic groups.

14-10. (Developmental) Increase the proportion of persons with chronic hepatitis C infection identified by State and local health departments.

Potential data sources: State health department databases of persons with HCV infection; National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

An estimated 4 million persons in the United States are infected chronically with HCV. Although the annual number of newly acquired HCV infections has declined from an estimated 180,000 in the mid-1980s to an estimated 28,000 in 1995, this reservoir of chronically infected persons can transmit the virus to others, and all of them are at risk for the severe consequences of chronic liver disease. Because of the large number of people with chronic HCV infection, identification of these persons must be a major focus of a comprehensive prevention strategy. Identification of HCV-infected persons allows (1) counseling to prevent further HCV transmission, (2) vaccination against HAV and HBV to prevent additional liver damage, (3) evaluation for chronic liver disease, (4) possible antiviral therapy, and (5) counseling to avoid potential hepatotoxins, such as alcohol, that may increase the severity of HCV-related liver disease.

14-11. Reduce tuberculosis.

Target: 1.0 new case per 100,000 population.

Baseline: 6.8 new cases of tuberculosis per 100,000 population in 1998.

Target setting method: Better than the best.

Data source: National TB Surveillance System, CDC, NCHSTP.

Total Population, 1998	**New Tuberculosis Cases** Rate per 100,000
TOTAL	6.8
Race and ethnicity	
American Indian or Alaska Native	11.2
Asian or Pacific Islander	34.9
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	17.4
White	3.8
Hispanic or Latino	13.6
Not Hispanic or Latino	5.9
Black or African American	17.8
White	2.3
Gender	
Female	5.0
Male	8.6
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The 1989 *Strategic Plan for the Elimination of TB in the United States*[44] set a tuberculosis elimination goal of reducing TB to 1 per million by 2010, with an interim goal of 3.5 cases per 100,000 population by 2000. However, in the mid-1980s the trend toward TB elimination was reversed, and drug-resistant strains emerged that were even more deadly. TB cases increased by 20 percent between 1985 and 1992. Renewed efforts to combat the resurgence included improving laboratories, strengthening surveillance and expanding directly observed therapy, and expediting investigation of close contacts of TB patients. From 1993 through 1998, new cases of TB again declined, although the resurgence and related outbreaks set back TB elimination efforts by about a decade. This effort depends on significant effort and cooperation between public and private health care providers and agencies at the Federal, State, and local levels.

14-12. Increase the proportion of all tuberculosis patients who complete curative therapy within 12 months.

Target: 90 percent of patients.

Baseline: 74 percent of tuberculosis patients completed curative therapy within 12 months in 1996.

Target setting method: Better than the best.

Data source: National TB Surveillance System, CDC, NCHSTP.

Tuberculosis Patients, 1996	**Completed Curative Therapy Within 12 Months** Percent
TOTAL	74
Race and ethnicity	
American Indian or Alaska Native	82
Asian or Pacific Islander	75
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	72
White	74
Hispanic or Latino	73
Not Hispanic or Latino	74
Black or African American	72
White	75
Gender	
Female	75
Male	73

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Data for socioeconomic status currently are not collected.

The highest priority for TB control is to ensure that persons with the disease complete curative therapy. If treatment is not continued for a sufficient length of time, such persons often become ill and contagious again. Completion of therapy is essential to prevent transmission of the disease as well as to prevent outbreaks and the development and spread of drug-resistant TB.

Current therapy guidelines recommend that patients with drug-susceptible TB should complete a successful regimen within 12 months.[45] Multidrug-resistant TB presents difficult treatment problems, often requiring consultation with a TB specialist and longer treatment regimens. The measurement of completion of therapy is a long-accepted indicator of the effectiveness of community TB control efforts. Health departments traditionally have reported completion-of-therapy results to CDC and used this information locally and statewide as an evaluation measure.

14-13. Increase the proportion of contacts and other high-risk persons with latent tuberculosis infection who complete a course of treatment.

Target: 85 percent.

Baseline: 62.2 percent of tuberculosis contacts and other high-risk persons completed treatment for latent TB infection in 1997.

Target setting method: 27 percent improvement. (Better than the best will be used when data are available.)

Data source: Completion of Preventive Therapy Report forms submitted by State and local health departments, CDC, NCHSTP.

Data for population groups currently are not collected.

Treatment for latent TB infection substantially reduces the risk that TB infection will progress to disease. Certain groups are at very high risk of developing TB disease once infected. Identifiable population groups at high risk for TB vary in time and geographic area depending on unique and changing TB-related demographics.[46]

14-14. Reduce the average time for a laboratory to confirm and report tuberculosis cases.

Target: 2 days for 75 percent of cases.

Baseline: 21 days were needed for a laboratory to confirm and report 75 percent of TB cases in 1996.

Target setting method: 90 percent improvement.

Data source: Survey of State Public Health Laboratories, CDC, NCHSTP.

Commercially available nucleic acid amplification tests are capable of detecting *Mycobacterium tuberculosis* in a specimen within 48 hours of receipt. Concerns regarding sensitivity, cost, quality control, and special expertise requirements prevent widespread use of such tests. Upgrading TB laboratory capabilities and facilities, improving training in state-of-the-art mycobacteriology, and evaluating proficiency should better enable State public health laboratories to apply these new rapid tests to the diagnosis of TB.

14-15. (Developmental) Increase the proportion of international travelers who receive recommended preventive services when traveling in areas of risk for select infectious diseases: hepatitis A, malaria, typhoid.

Potential data source: Abstract of International Travel To and From the United States, U.S. Department of Commerce.

The number of international travelers from the United States has increased an average of 3 percent a year for the past decade. The three diseases highlighted in this objective—hepatitis A, malaria, and typhoid—account for a large proportion of illness and disability for international travelers. Before embarking, some travelers go to a travel clinic, some visit primary care providers, and some receive no pretravel care.

An appropriate prescription of antimalarial prophylaxis medications constitutes recommended preventive services for this disease. Risk areas can be identified by referencing the malaria section in the most recent edition of *Health Information for International Travel*.

14-16. Reduce invasive early onset group B streptococcal disease.

Target: 0.5 new cases per 1,000 live births.

Baseline: 1.0 new case of invasive early onset group B streptococcal disease per 1,000 live births in 1996.

Target setting method: Better than the best.

Data source: Active Bacterial Core Surveillance (ABCs), Emerging Infections Program Network, CDC, NCID.

Live Births, 1996	**New Cases of Group B Streptococcal Disease** Rate per 1,000
TOTAL	1.0
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	1.5
White	1.0
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	DNA
Male	DNA
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The number of new cases of early onset group B streptococcal (GBS) disease in 1996 reflected a substantial decline from earlier years, before intervention became common practice. GBS causes bloodstream infections and meningitis in babies. Additional prevention is possible, since occurrence of the disease is more likely to reflect ineffective prevention efforts than antibiotic failures. In certain areas, rates approximating 0.5 per 1,000 births already have been achieved. Although these data may represent the background rate of nonpreventable cases, most geographic areas should be able to achieve the same low rates. The racial disparity in rates will be eliminated with more aggressive use of prevention protocols.

African Americans have consistently had higher rates of GBS diseases than other races. Implementation of GBS prevention policies is expected to eliminate the disparity. Thus, the target of 0.5 cases per 1,000 births is one that can be obtained in all geographic areas and all racial and ethnic groups. By the year 2010, reductions in early-onset disease might be the result of both improved use of intrapartum antibiotic prophylaxis and implementation of GBS conjugate vaccines currently in clinical trials.

14-17. Reduce hospitalizations caused by peptic ulcer disease in the United States.

Target: 46 hospitalizations per 100,000 population.

Baseline: 71 hospitalizations per 100,000 population in 1997.

Target setting method: Better than the best.

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

Total Population, 1997	**Peptic Ulcer Hospitalizations** Rate per 100,000
TOTAL	71
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	79
White	53
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	65
Male	78
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Peptic ulcer disease affects up to 25 million persons in the United States and causes up to 6,500 deaths each year. Until recently, peptic ulcers were thought to be caused by stress, spicy foods, and excess stomach acid. Most patients were treated with antacids or acid-reducing medications, and recurrences were the rule after therapy was discontinued. The discovery in the 1980s that a bacterial organism, *Helicobacter pylori (H. pylori)*, causes up to 90 percent of peptic ulcers has changed the way ulcers are evaluated and managed.[47, 48] Now appropriate antibiotic regimens successfully eradicate the infection and prevent recurrence and complications such as bleeding or perforation.

Despite extensive scientific data linking peptic ulcer disease to *H. pylori*, studies indicate that many health care providers and consumers are unaware of the relationship, and many persons with ulcers do not receive appropriate therapy.[49, 50] A campaign to educate health care providers and consumers about *H. pylori* and its link to peptic ulcer disease was initiated in 1997. The CDC and Partnership H. pylori Educational Campaign includes partners from academic institutions, government agencies, and industry.[51] The increased awareness of the link between *H. pylori* and ulcers among health care providers and consumers is expected to lead to the increased use of appropriate antibiotics. This improved treatment, if available to those who need it, should decrease hospitalization rates—an indicator for severe illness and disability—due to peptic ulcer disease and its complications.

14-18. Reduce the number of courses of antibiotics for ear infections for young children.

Target: 88 antibiotic courses per 100 children under age 5 years.

Baseline: 108 antibiotic courses for otitis media per 100 children under age 5 years were prescribed during 1996-97 (2-year average).

Target setting method: 19 percent improvement.

Data sources: National Ambulatory Medical Care Survey (NAMCS), CDC, NCHS; National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

Children Under Age 5 Years, 1996-97	Courses of Antibiotics for Ear Infections Rate per 100
TOTAL	108
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	84
White	116
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	107
Male	109

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Data for socioeconomic status currently are not collected.

Antibiotic courses for otitis media, commonly called ear infection, can be reduced through two methods. A portion of otitis media cases—otitis media with effusion, rather than acute otitis media—do not require antimicrobial treatment. A national campaign for judicious antibiotic use aims to reduce inappropriate antibiotic treatment for this portion of otitis media.[52] The leading cause of otitis media is pneumococcus. Preventing pneumococcal otitis media is expected to be possible following licensure of pneumococcal conjugate vaccines. (See Focus Area 28. Vision and Hearing.)

14-19. Reduce the number of courses of antibiotics prescribed for the sole diagnosis of the common cold.

Target: 1,268 antibiotic courses per 100,000 population.

Baseline: 2,535 antibiotic courses per 100,000 population were prescribed for the sole diagnosis of the common cold, 1996-97.

Target setting method: 50 percent improvement.

Data sources: National Ambulatory Medical Care Survey (NAMCS), CDC, NCHS; National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

Total Population, 1996-97	**Courses of Antibiotics for Common Cold** Rate per 100,000
TOTAL	2,535
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DSU
White	2,431
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	2,644
Male	2,421
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The common cold does not require antimicrobial therapy. Inappropriate therapy for the common cold can be reduced by 50 percent by promoting judicious antimicrobial use, provided that care givers and patients accept that antibiotics are ineffective in treating colds. Effective programs for the judicious use of antibiotics could help reduce the prescription of antibiotics for the common cold.

14-20. Reduce hospital-acquired infections in intensive care unit patients.

Target and baseline:

Objective	Reduction in Hospital-Acquired Infections in Intensive Care Units	1998 Baseline	2010 Target
		Infections per 1,000 Days' Use	
	Intensive care patients		
14-20a.	Catheter-associated urinary tract infection	5.9	5.3
14-20b.	Central line-associated bloodstream infection	5.3	4.8
14-20c.	Ventilator-associated pneumonia	11.1	10.0
	Infants weighing 1,000 grams or less in intensive care		
14-20d.	Central line-associated bloodstream infection	12.2	11.0
14-20e.	Ventilator-associated pneumonia	4.9	4.4

Target setting method: 10 percent improvement. (Better than the best will be used when data are available.)

Data source: National Nosocomial Infections Surveillance System (NNIS), CDC, NCID.

Data for population groups currently are not collected.

Hospital-acquired infections are a leading cause of illness and death in the United States. Each year, 36 million patients are admitted to U.S. hospitals. Annually, more than 500,000 of the nearly 2 million patients stricken with a hospital-acquired infection are intensive care patients. Of the total, nearly 90,000 die. The annual cost of hospital-acquired infections is approximately $4.5 billion a year. In the last 20 years, the rate of hospital-acquired infections has increased 36 percent.

The rate of hospital-acquired infections has increased largely because hospital patients of the late 1990s on average were older and sicker than those of 20 years earlier and thus more susceptible to infection, and also because medical advances that can save or prolong lives may carry risks for infections. Because both trends are expected to continue, only a modest reduction in the number of new cases of infections can be expected; however, a small reduction will save thousands of lives.

14-21. Reduce antimicrobial use among intensive care unit patients.

Target: 120 daily doses per 1,000 patient days.

Baseline: 150 daily doses of antimicrobials per 1,000 patient days were used among intensive care unit patients in 1995.

Target setting method: 20 percent improvement.

Data source: National Nosocomial Infections Surveillance System (NNIS), CDC, NCID.

Hospital-acquired infections caused by antimicrobial-resistant pathogens can be virtually untreatable. Further, antimicrobial resistance that develops in the hospital can spread into the community and has the potential to cause a public health disaster. Excessive or inappropriate use of antimicrobials or both, which occur most frequently in intensive care units (ICUs), is the major cause of antimicrobial resistance. Research indicates that antibiotics are being used more often than hospital prescription guidelines recommend. For example, one study in the late 1990s indicated that as much as 60 percent of the hospital prescriptions for vancomycin are not in accordance with the guidelines. Decreasing the use of antimicrobials, especially in intensive care units, is the critical step in reducing the public threat of antimicrobial resistance. Studies have shown that interventions in individual hospitals have achieved reductions of 20 percent or more in antimicrobial use.

Vaccination Coverage and Strategies

14-22. Achieve and maintain effective vaccination coverage levels for universally recommended vaccines among young children.

Target and baseline:

Objective	Increase and Maintenance of Vaccination Coverage Levels Among Children Aged 19 Through 35 Months	1998 Baseline	2010 Target
		Percent	
14-22a.	4 doses diphtheria-tetanus-pertussis (DtaP) vaccine	84	90
14-22b.	3 doses *Haemophilus influenzae* type b (Hib) vaccine	93	90
14-22c.	3 doses hepatis B vaccine (hep B)	87	90
14-22d.	1 dose measles-mumps-rubella (MMR) vaccine	92	90
14-22e.	3 doses polio vaccine	91	90
14-22f.	1 dose varicella vaccine	43	90

Target setting method: Consistent with the Childhood Immunization Initiative.

Data source: National Immunization Survey (NIS), CDC, NCHS and NIP.

Children Aged 19 Through 35 Months, 1998	**Vaccination Coverage**					
	14-22a. 4 Doses DTaP	**14-22b 3 Doses Hib**	**14-22c. 3 Doses Hep B**	**14-22d. 1 Dose MMR**	**14-22e. 3 Doses Polio**	**14-22f. 1 Dose Varicella**
	Percent					
TOTAL	84	93	87	92	91	43
Race and ethnicity						
American Indian or Alaska Native	78	92	80	86	83	33
Asian or Pacific Islander	87	93	90	93	94	57
Asian	DNC	DNC	DNC	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC	DNC	DNC	DNC
Black or African American	77	90	84	89	88	43
White	86	94	88	93	92	43
Hispanic or Latino	80	92	86	91	89	47
Not Hispanic or Latino	85	94	87	92	91	42
Black or African American	77	90	84	89	88	42
White	87	95	88	93	92	42
Gender						
Female	84	94	87	92	91	43
Male	84	93	87	92	90	43
Family income level						
Poor	81	92	86	91	90	46
Near poor	83	92	87	91	91	42
Middle/high income	89	96	89	94	92	49

Children Aged 19 Through 35 Months, 1998	**Vaccination Coverage**					
	14-22a. **4 Doses DTaP**	**14-22b** **3 Doses Hib**	**14-22c.** **3 Doses Hep B**	**14-22d.** **1 Dose MMR**	**14-22e.** **3 Doses Polio**	**14-22f.** **1 Dose Varicella**
	Percent					
Disability status						
Persons with disabilities	DNC	DNC	DNC	DNC	DNC	DNC
Persons without disabilities	DNC	DNC	DNC	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Vaccination coverage levels of 90 percent are, in general, sufficient to prevent circulation of viruses and bacteria causing vaccine-preventable diseases.[53, 54] Maintenance of high vaccination coverage levels in early childhood is the best way to prevent the spread of VPDs in childhood and to provide the foundation for controlling VPDs among adults. Diseases that affect humans only may eventually be eradicated or at least eliminated through high vaccination coverage levels.[55] These diseases include polio and measles in the near future and possibly hepatitis B later on. Although polio is expected to be eradicated by the year 2000, vaccine coverage levels will continue to be assessed until vaccination is no longer recommended. The measles epidemic of 1989-91 demonstrated that achievement of high coverage levels at the time of school entry was insufficient to control VPD outbreaks. Although coverage levels are currently the highest ever recorded, the United States must continue to assure that each new cohort of children is fully vaccinated with all required vaccine doses; as of November 1, 1999, 16 to 20 vaccine doses are required through age 16 years with 12 to 16 doses by age 2 years. Any new universally recommended vaccine should be at a 90 percent coverage level within 5 years of the recommendation.

Although national coverage levels may exceed 90 percent, variation in the level of coverage among smaller areas may include subgroups of the population at substantially lower levels of protection. These subgroups or pockets of undervaccinated persons make the population vulnerable to major outbreaks of VPDs. Monitoring of coverage at smaller geographic levels within the United States helps ensure that these potential pockets of children are identified to target interventions and reduce the risk of future disease outbreaks. In addition, each State and major urban area should aim to achieve 90 percent coverage to ensure uniformly high vaccination coverage.

14-23. Maintain vaccination coverage levels for children in licensed day care facilities and children in kindergarten through the first grade.

Target and baseline:

Objective	Maintain Vaccination Coverage Levels for Children	1997–98 Baseline	2010 Target
		Percent	
	Children in day care		
14-23a.	Diphtheria-tetanus-acellular pertussis (DTaP) vaccine	96	95
14-23b.	Measles-mumps-rubella (MMR) vaccine	93	95
14-23c.	Polio vaccine	95	95
14-23d.	Hepatitis B vaccine	**Developmental**	
14-23e.	Varicella vaccine	**Developmental**	
	Children in K-1st grade		
14-23f.	Diphtheria-tetanus-acellular pertussis (DtaP) vaccine	97	95
14-23g.	Measles-mumps-rubella (MMR) vaccine	96	95
14-23h.	Polio vaccine	97	95
14-23i.	Hepatitis B vaccine	**Developmental**	
14-23j.	Varicella vaccine	**Developmental**	

Target setting method: Consistent with year 2000 target. (Better than the best will be used when data are available.)

Data source: Immunization Program Annual Reports, CDC, NIP.

Data for population groups currently are not collected.

Uniformly high coverage levels are required to prevent circulation of the viruses and bacteria that cause VPDs. The target level was set to be consistent with the Healthy People 2000 objective because the achievement of that objective has been successful at preventing disease spread, and this objective seeks to maintain the high coverage achieved in these settings.

Entry requirements for school and day care are one of the most effective interventions the States have at their disposal to ensure that children are appropriately vaccinated. The impact of entry requirements for school and day care has been profound—more than 95 percent of children are vaccinated. Several studies support the role of entry requirements in increasing vaccination rates and decreasing the rate of new cases of measles. Strict enforcement of school vaccination requirements has been shown to play a determining role in lowering new cases of measles.[56]

14-24. Increase the proportion of young children who receive all vaccines that have been recommended for universal administration for at least 5 years.

Target: 80 percent of children aged 19 through 35 months.

Baseline: 73 percent of children aged 19 through 35 months received the recommended vaccines (4 DTaP, 3 polio, 1 MMR, 3 Hib, 3 hepatitis B) in 1998.

Target setting method: Better than the best.

Data source: National Immunization Survey (NIS), CDC, NCHS and NIP.

Children Aged 19 Through 35 Months, 1998	Vaccinations	
	14-24. 4 DTaP, 3 polio, 1 MMR, 3 Hib, 3 Hepatitis B	4 DTaP, 3 polio, 1 MMR*
	Percent	
TOTAL	73	81
Race and ethnicity		
American Indian or Alaska Native	65	75
Asian or Pacific Islander	73	82
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	66	74
White	74	82
Hispanic or Latino	69	77
Not Hispanic or Latino	74	81
Black or African American	67	74
White	76	83
Gender		
Female	72	81
Male	73	81

Children Aged 19 Through 35 Months, 1998	Vaccinations	
	14-24. 4 DTaP, 3 polio, 1 MMR, 3 Hib, 3 Hepatitis B	4 DTaP, 3 polio, 1 MMR*
	Percent	
Family income level		
Poor	70	78
Near poor	72	80
Middle/high income	77	85
Disability status		
Persons with disabilities	DNC	DNC
Persons without disabilities	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for 4 DTaP, 3 polio, and 1 MMR are displayed to further characterize the issue.

Determining whether the population is protected against a VPD is best evaluated by examining the immunization coverage of individual vaccines (see objective 14-22). It is also important to assure that the health care system fully vaccinates individual children, providing vaccines that have been universally recommended for at least 5 years and that are currently recommended. Changes in the immunization schedule will occur as new vaccines are added to the list of recommended vaccines and as vaccines for eradicated diseases are removed from the list.[57] For example, polio virus vaccine is not expected to be recommended by the year 2010. Although monitoring the proportion of children who have received the combination of four DTaP, three polio, and one MMR will continue for historical comparison, attention should be focused on the combination of all universally recommended vaccines.

14-25. Increase the proportion of providers who have measured the vaccination coverage levels among children in their practice population within the past 2 years.

Target and baseline:

Objective	Increase in Providers Measuring Vaccination Levels	1997 Baseline	2010 Target
		Percent	
14-25a.	Public health providers	66	90
14-25b.	Private providers	6	90

Target setting method: 36 percent improvement for public health providers; 1,400 percent improvement for private providers.

Data source: Immunization Program Annual Reports, CDC, NIP.

In 1997, 66 percent of public health department providers assessed their vaccination levels.[58] State immunization programs are collaborating with private providers to extend provider-based assessments to the private sector. With the increasing role of managed care and Health Plan and Employer Data and Information Set (HEDIS) measures, private providers should have additional occasions to examine their coverage levels.

Most providers (public and private) overestimate the vaccination coverage level they are achieving with their clients.[59] Assessment of practice-based coverage levels and feedback of those data to the providers have been an effective strategy for increasing vaccination of children served by a given practice.[60, 61] Managed care organizations have begun reporting vaccination coverage levels using the HEDIS criteria as a way of evaluating quality of care.[62] Practice-based assessment also has been recommended by the Advisory Committee on Immunization Practices,[63] the National Vaccine Advisory Committee, the American Academy of Pediatrics, and the American Academy of Family Physicians.[64] The Clinic Assessment Software Application provides a mechanism for assessing levels of vaccination coverage as well as for tracking patients; the system reminds patients of upcoming vaccinations and sends notices for children who are overdue.

14-26. Increase the proportion of children who participate in fully operational population-based immunization registries.

Target: 95 percent of children under age 6 years.

Baseline: 32 percent of children under age 6 years participated in a fully operational population-based immunization registry in 1998.

Target setting method: 197 percent improvement. (Better than the best will be used when data are available.)

Data source: Immunization Program Annual Reports, CDC, NIP.

Data for population groups currently are not collected.

A fully operational population-based registry includes capabilities to (1) protect confidential information, (2) enroll all children at the State or community level automatically at birth, (3) give providers access to complete vaccination history, (4) recommend needed vaccinations, (5) notify children who are due and overdue for vaccinations, (6) assess practice and geographic-level coverage, and (7) produce authorized immunization records. Registries may provide other important functions such as automatic reporting of adverse events. Registries may serve other purposes as well, including VPD surveillance, vaccine efficacy monitoring, and vaccine inventory management.

Population-based immunization registries will be a cornerstone of the Nation's immunization system by 2010. Responsibility for registry development rests with State and local communities, with assistance from Federal agencies and private partners. Registries facilitate the timely vaccination of children by ensuring that the child's complete vaccination history is available to the health care provider. Registries are valuable given the mobile nature of today's population and that many persons do not see the same provider consistently. Registries also can be used to monitor the vaccination status of populations that are low income, uninsured, and at greater risk for incomplete vaccination.

Few population-based immunization registries existed at the State or community level before 1992, and limited data are available regarding their implementation. A 1999 CDC survey shows immunization registries are being developed in all States.[65] Additional efforts are underway to establish registry links between private providers and immunization partners such as managed care organizations and WIC programs. Issues such as privacy, confidentiality, and access of registry data are being addressed as registries are developed.

Participation in immunization registries will continue to increase. The development of childhood immunization registries has widespread support among parents and providers[66] and the required technology is becoming less expensive and simpler. Registries are part of the current trend to computerize medical data in the United States. To be successful, registries must be seamlessly integrated into the current provider environment and create no additional burdens.

14-27. (Developmental) Increase routine vaccination coverage levels of adolescents.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

Illness and disability caused by vaccine-preventable diseases, such as hepatitis B, measles, and varicella, continue among adolescents.[24] While primary health care providers are vital to ensuring that infants and younger children are up to date on their vaccinations, they have an equally important role in ensuring comprehensive vaccination for adolescents.[67] Any new universally recommended vaccine for adolescents should be at a 90 percent coverage level within 5 years of the recommendation. An estimated 79 percent of adolescents and children visit a health care provider annually.[68] Providers such as nurses, nurse practitioners, pediatricians, family physicians, general practitioners, and emergency medicine specialists deliver most of the primary health care received by adolescents.[69] Strategies should specifically target these providers to increase vaccination among adolescents, especially hard-to-reach and at-risk adolescents in urban and rural areas.

School entry laws and regulations ensure high vaccination levels. Much of the experience to date in implementing adolescent vaccination comes from school-based hepatitis B demonstration projects.[70] To encourage school participation in an adolescent vaccination program, a partnership between schools and local health departments is essential.

Managed care organizations also have an increasingly important role in the delivery of health care services, including vaccinations, to adolescents. Measures for assessing immunization recommendations for adolescents have been incorporated into HEDIS 3.0.[62] Such standards should greatly assist in implementing immunization recommendations for adolescents in the managed care setting.

14-28. Increase hepatitis B vaccine coverage among high-risk groups.

Target and baseline:

Objective	Increase Hepatitis B Vaccine Coverage in High-Risk Groups	1995 Baseline	2010 Target
		Percent	
14-28a.	Long-term hemodialysis patients	35	90
14-28b.	Men who have sex with men	9	60
14-28c.	Occupationally exposed workers	71	98

Target setting method: 157 percent improvement for long-term hemodialysis patients; 567 percent improvement for men who have sex with men; 38 percent improvement for occupationally exposed workers.

Data sources: Young Men's Survey, CDC, NCHSTP; Annual Survey of Chronic Hemodialysis Centers, CDC, NCID, and HCFA; Periodic vaccine coverage surveys, CDC, NCID.

Hepatitis B vaccination has been recommended for persons with risk factors for hepatitis B virus infection since the vaccine was first licensed in 1981. These risk groups include the following: hemodialysis patients, men who have sex with men, incarcerated persons, health care and public safety workers who have exposure to blood in the workplace, persons with a history of sexually transmitted diseases or multiple sex partners, injection drug users, and household and sex contacts of HBV-infected persons. While data currently are not collected for inmates in long-term correctional facilities, it is recommended that prison officials should consider undertaking screening and vaccination programs directed at inmates with histories of high-risk behaviors.

14-29. Increase the proportion of adults who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease.

Target and baseline:

Objective	Increase in Adult Vaccinations	1997 Baseline	2010 Target
		Percent	
	Noninstitutionalized adults aged 65 years and older*		
14-29a.	Influenza vaccine	63	90
14-29b.	Pneumococcal vaccine	43	90
	Noninstitutionalized high-risk adults aged 18 to 64 years*		
14-29c.	Influenza vaccine	25	60
14-29d.	Pneumococcal vaccine	11	60
	Institutionalized adults (persons in long-term or nursing homes)†		
14-29e.	Influenza vaccine	64	90
14-29f.	Pneumococcal vaccine	28	90

*Data on noninstitutionalized population age adjusted to the year 2000 standard population.

†Data on institutionalized population age adjusted to the year 2000 nursing home population. National Nursing Home Survey estimates include a significant number of residents who have an unknown vaccination status. See *Tracking Healthy People 2010* for further discussion of the data issues.

Target setting method: Better than the best.

Data sources: National Health Interview Survey (NHIS), CDC, NCHS-noninstitutionalized populations; National Nursing Home Survey (NNHS), CDC, NCHS—institutionalized populations.

Select Age Groups, 1997	Annual Influenza and One-Time Pneumococcal Vaccinations					
	Noninstitutionalized Adults Aged 65 Years and Older*		Noninstitutionalized High-Risk Adults Aged 18 to 64 Years*		Institutionalized Adults Aged 18 Years and Older†	
	14-29a. Influenza	14-29b. Pneumococcal Disease	14-29c. Influenza	14-29d. Pneumococcal Disease	14-29e. Influenza	14-29f. Pneumococcal Disease
	Percent					
TOTAL	63	43	25	11	64	28
Race and ethnicity						
American Indian/ Alaska Native	DSU	DSU	29	22	DSU	DSU
Asian or Pacific Islander	50	24	22	DSU	DSU	DSU
Asian	50	DSU	DSU	DSU	DNC	DNC
Native Hawaiian and other Pacific Islander	DSU	DSU	DSU	DSU	DNC	DNC
Black or African American	45	22	21	13	DNA	DNA
White	65	45	25	11	DNA	DNA
Hispanic or Latino	53	24	18	7	52	17
Not Hispanic or Latino	64	44	25	11	DNA	DNA
Black or African American	45	22	21	13	60	24
White	66	46	26	11	65	29
Gender						
Female	62	42	26	11	DNA	DNA
Male	65	44	23	11	DNA	DNA
Education level						
Less than high school	58	37	18	10	DNA	DNA
High school graduate	65	45	24	12	DNA	DNA
Some college	69	48	27	11	DNA	DNA

Select Age Groups, 1997	Annual Influenza and One-Time Pneumococcal Vaccinations					
	Noninstitutionalized Adults Aged 65 Years and Older*		Noninstitutionalized High-Risk Adults Aged 18 to 64 Years*		Institutionalized Adults Aged 18 Years and Older†	
	14-29a. Influenza	14-29b. Pneumococcal Disease	14-29c. Influenza	14-29d. Pneumococcal Disease	14-29e. Influenza	14-29f. Pneumococcal Disease
	Percent					
Disability status						
Persons with disabilities	66	47	28	16	DNA	DNA
Persons without disabilities	62	40	23	9	DNA	DNA
Select populations						
Age Groups						
18 to 49 years	NA	NA	19	8	59	26
50 to 64 years	NA	NA	40	19	62	23
65 to 74 years	61	40	NA	NA	62	28
75 to 84 years	66	46	NA	NA	61	26
85 years and older	67	42	NA	NA	66	30
Persons with diabetes	68	44	27	15	DNA	DNA
Persons with heart disease	71	51	25	11	DNA	DNA
Persons with lung disease	73	65	25	13	DNA	DNA
Persons with lung disease (excluding asthma)	74	66	26	14	DNA	DNA
Persons with kidney disease	71	46	21	13	DNA	DNA
Persons with liver disease	71	43	26	10	DNA	DNA
Persons with cancer	71	51	25	10	DNA	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data on noninstitutionalized population age adjusted to the year 2000 standard population.

†Data on institutionalized population age adjusted to the year 2000 nursing home population.

Federal initiatives have highlighted the need to focus vaccination resources on adults.[71] Vaccination is an effective strategy to reduce illness and deaths due to pneumococcal disease and influenza. Current levels of coverage among adults vary widely among age, risk, and racial and ethnic groups. Any new universally recommended vaccine should be at a 60 percent coverage level within 5 years of recommendation. Influenza and pneumococcal vaccines are covered by Medicare; thus vaccinating greater numbers of adults aged 65 years and older is feasible. High-risk adults aged 18 to 64 years may not have insurance coverage for influenza and pneumococcal vaccines.

With the aging of the U.S. population, increasing numbers of adults will be at risk for these major causes of illness and death. Persons with high-risk conditions (that is, heart disease, diabetes, and chronic respiratory disease[72, 73]) remain at increased risk for these diseases, as do persons living in institutional settings.

Continuing education of providers and the community is needed to increase awareness of and demand for adult vaccination services. Interventions, such as standing orders for vaccination, provider reminders and feedback, and patient notifications and reminders have been effective in increasing adult vaccination levels.[21, 74] Guidelines and tools for implementing these interventions are available through *Put Prevention Into Practice*, a national campaign to improve delivery of clinical preventive services.[75] Measurement and feedback about vaccination providers' performance in delivering vaccines enhance coverage rates. Providers should be given feedback on their performance in a timely manner. Measurement and feedback can result in improvements in vaccine coverage either by changing provider knowledge, attitudes, and behavior or by stimulating changes in the vaccine delivery system—for example, reminders and standing orders—or some combination.

In addition, opportunities for vaccination outside of primary care and other traditional health care settings could be increased to reach elderly persons who do not routinely access primary care. For example, over 90 million emergency department visits are made in the United States annually. Emergency department vaccination is likely to increase vaccination rates among select populations difficult to vaccinate through office-based programs. In any nontraditional site, a method for tracking and communicating vaccinations is needed so that vaccination information may be shared with patients' primary care providers.

Vaccine Safety

14-30. Reduce vaccine-associated adverse events.

14-30a. Eliminate vaccine-associated paralytic polio (VAPP).

Target: Zero cases.

Baseline: 5 VAPP cases in 1997.

Target setting method: Total elimination.

Data source: National Notifiable Disease Surveillance System (NNDSS), CDC, EPO.

14-30b. Reduce febrile seizures caused by pertussis vaccines.

Target: 75 febrile seizures.

Baseline: 152 febrile seizures were caused by pertussis vaccines in 1998.

Target setting method: 50 percent improvement.

Data sources: Vaccine Adverse Event Reporting System (VAERS) and Vaccine Safety Datalink (VSD), CDC, NIP.

Because no natural reservoirs for wild poliomyelitis exist, VAPP is caused by the oral polio vaccine (OPV). With global polio eradication targeted for 2000, use of OPV should decrease and then stop, resulting in zero cases of VAPP. From 1980 to 1998, no indigeneous cases of paralytic poliomyelitis caused by wild polio virus transmission have occurred in the United States. However, 141 cases of VAPP have been reported in this same period, averaging 8 or 9 cases per year. Persons with VAPP experience the full range of illness and disability as well as loss of social function associated with being partially or fully paralyzed. Due to the progress in global poliomyelitis eradication and to the reduction of the burden of VAPP in the United States, ACIP recommended that beginning in 2000, only IPV will be used for routine immunization.[76] In general, IPV is as effective as OPV and should be sufficient at preventing polio in the United States.

Controlled clinical trials indicate that whole cell pertussis (wP) vaccines cause seizures at a frequency of 1 per 1,750 doses.[37, 77, 78] The majority of these seizures are febrile seizures without any residual deficit. Nevertheless, such seizures—frightening patients and parents alike—frequently result in emergency department or other medical visits as well as costly diagnostic evaluations to rule out possible neurologic disorders. Recently licensed acellular pertussis (aP) vaccines are less likely to cause fever or seizures; data show seizure frequency of up to 1 per 14,280 doses.[37] With the increasing use of aP vaccines, the number of pertussis vaccine-associated febrile seizures should be reduced by 50 percent.

14-31. Increase the number of persons under active surveillance for vaccine safety via large linked databases.

Target: 13 million persons.

Baseline: 6 million persons were under active surveillance for vaccine safety via large linked databases in 1999.

Target setting method: 117 percent improvement.

Data source: Vaccine-Safety Datalink, CDC, NIP.

A high standard of safety is expected of vaccines since they are recommended for millions of healthy people, including infants. Vaccine safety monitoring to identify and minimize vaccine-related reactions is necessary to help ensure safety because no vaccine is completely safe. Knowledge of vaccine safety is essential to accurately assess the risks and benefits in formulating vaccine use recommendations. For example, the Institute of Medicine has reported that of 76 adverse events assessed, 66 percent had inadequate or no evidence available to accept or reject vaccine as a cause of the adverse reactions.[79, 80]

In collaboration with several health maintenance organizations, CDC has linked anonymous vaccination and medical records in a large database.[81] This system is used to study vaccine safety, especially for evaluating new concerns arising from the Vaccine Adverse Event reporting System (VAERS) and other sources. These databases also are used for monitoring vaccine safety, conducting active surveillance of VPDs, carrying out vaccine safety and immunogenicity trials, evaluating vaccine economics, and assessing vaccine coverage.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-1. Persons with health insurance
1-2. Health insurance coverage for clinical preventive services
1-3. Counseling about health behaviors
1-4. Source of ongoing care
1-5. Usual primary care provider
1-6. Difficulties or delays in obtaining needed health care
1-7. Core competencies in health provider training
1-8. Racial and ethnic representation in health professions
1-9. Hospitalization for ambulatory-care-sensitive conditions
1-14. Special needs of children
1-15. Long-term care services

7. Educational and Community-Based Programs

7-2. School health education

7-4. School nurse-to-student ratio

7-5. Worksite health promotion programs

7-6. Participation in employer-sponsored health promotion activities

7-7. Patient and family education

7-8. Satisfaction with patient education

7-9. Health care organization sponsorship of community health promotion activities

7-10. Community health promotion programs

7-11. Culturally appropriate community health promotion programs

7-12. Older adult participation in community health promotion activities

8. Environmental Health

8-5. Safe drinking water

8-6. Waterborne disease outbreaks

8-29. Global burden of disease

8-30. Water quality in the U.S.-Mexico border region

10. Food Safety

10-1. Foodborne infections

10-2. Outbreaks of foodborne infections

10-3. Antimicrobial resistance of *Salmonella* species

10-5. Consumer food safety practices

10-6. Safe food preparation practices in retail establishments

11. Health Communication

11-1. Households with Internet access

11-2. Health literacy

11-3. Research and evaluation of communication programs

11-4. Quality of Internet health information sources

11-5. Centers for excellence

11-6. Satisfaction with providers' communication skills

13. HIV

13-9. HIV/AIDS, STD, and TB education in State prisons

13-11. HIV testing in TB patients

13-12. Screening for STDs and immunization for hepatitis B

16. Maternal, Infant, and Child Health

16-22. Medical home for children with special health care needs

23. Public Health Infrastructure

23-1. Public health employee access to Internet

23-2. Public access to information and surveillance data

23-3. Use of geocoding in health data systems

23-4. Data for population groups

23-5. Data for Leading Health Indicators, Health Status Indicators, and Priority Data Needs at State, Tribal, and local levels

23-6. National tracking of Healthy People 2010 objectives

23-7. Timely release of data on objectives

23-8. Competencies for public health workers

23-9. Training in essential public health services
23-10. Continuing education and training by public health agencies
23-11. Performance standards for essential public health services
23-12. Health improvement plans
23-13. Access to epidemiology services
23-14. Model statutes related to essential public health services
23-16. Conducting and collaborating in prevention research

25. Sexually Transmitted Diseases

25-13. Hepatitis B vaccine services in STD clinics

Terminology

(A list of all acronyms used in this publication appears in Appendix K.)

Advisory Committee on Immunization Practices (ACIP): Federally chartered advisory committee with the goals of providing advice to the CDC Director on decreasing disease through the use of vaccines and other biological products and on improving the safety of their use.

Common cold: Defined based on International Classification of Disease (ICD)-9 diagnostic codes 460.0, 461.0, 465.0, 465.8, 465.9, 472.0.

Complete curative therapy: Full course of recommended treatment.

Comprehensive primary care: All aspects of routine health care (preventive, diagnostic, and therapeutic) delivered by a trained health care provider.

Conjugate vaccines: A type of inactivated vaccine composed of fractions of bacteria linked to a protein. This linkage makes the vaccine more potent.

Emerging infectious diseases: Diseases of infectious origin whose occurrence in humans has increased within the past two decades or threatens to increase in the near future. Recognition of an emerging disease occurs because the disease is present in the population for the first time, the disease has been detected for the first time, or links between an infectious agent and a chronic disease or syndrome have only recently been identified.

Group B Streptococcus (GBS): A normal germ found in the intestines and on the genitals of about one out of five pregnant women. GBS is usually not harmful to the woman carrying the germ. But it can cause dangerous infections in the blood, spinal fluid, and lungs of babies born to these women.

Early onset of group B streptococcal disease: Illness onset at less than 7 days of age.

Invasive group B streptococcal disease: Isolation of group B streptococcus from a normally sterile site, such as blood or cerebrospinal fluid.

Group immunity: The immunity of a group or community. Immunity based on the resistance to infection among a high proportion of individual members of the group.

Hospital-acquired infection: Any infection that a patient acquires as a result of medical treatment while in the hospital.

Invasive pneumococcal infection: Isolating the bacteria *Streptococcus pneumoniae* from a normally sterile site, including blood, cerebrospinal fluid, or pleural fluid.

Latent TB infection: The state of being infected with the organism *Mycobacterium tuberculosis* but without signs or symptoms of active TB disease.

Multiple sex partners: More than one partner in the prior 6 months.

National Notifiable Disease Surveillance System (NNDSS): Tracking system that State health departments use to report cases of selected diseases to CDC. (See Reportable disease).

Patient day: A day or part of a day for which a patient was hospitalized.

Penicillin resistant: Having a minimum inhibitory concentration (MIC) equal to or greater than 2 μg/ml. Strains with "intermediate" susceptibility are not included in this category.

Reemerging infectious diseases: Reappearance of a known infection after a decline in occurrence. Reemergence of "old" infectious agents can be the result of lapses in public health measures, changes in human behavior that increase person-to-person transmission of infectious agents, changes in food handling or eating habits, or changes in the way humans interact with their environment.

Reportable disease: A disease for which there are legal requirements for reporting and notification to public health authorities. In the United States, requirements for reporting diseases are mandated by State laws or regulations, and the list of reportable diseases in each State differs.

Surveillance regions: The nine regions of the United States used for influenza surveillance purposes.

Vaccine Adverse Events Reporting System (VAERS). A passive surveillance system that monitors vaccine safety by collecting and analyzing reports of adverse events following immunization from vaccine manufacturers, private practitioners, State and local public health clinics, parents, and individuals who receive vaccines. CDC and the Food and Drug Administration work together to implement VAERS.

Vaccines: Biological substances used to stimulate the development of antibodies and thus confer active immunity against a specific disease or number of diseases.

Vector-borne disease: Viral and bacterial diseases transmitted to humans by arthropods, primarily mosquitoes, ticks, and fleas.

Zoonotic disease: Viral and bacterial diseases transmitted to humans by arthropods, primarily mosquitoes, ticks, and fleas.

References

1. Meltzer, M.I.; Dennis, D.T.; and Orloski, K.A. The Cost Effectiveness of Vaccinating Against Lyme Disease. *Emerging and Infectious Diseases* 5(3):321-328, May-June 1999. Retrieved December 14, 1999 <http://www.cdc.gov/ncidod/eid/vol5no3/meltzer.htm>.

2. Centers for Disease Control and Prevention (CDC). Summary of notifiable disease—United States, 1994. *Morbidity and Mortality Weekly Report* 43(53), 1995.

3. Rubella Surveillance National Communicable Disease Center, United States Department of Health, Education and Welfare (No. 1), June 1969.

4. Atkinson, W.; Humiston, S.G.; and Pollard., B., eds. Epidemiology and prevention of vaccine-preventable diseases. Atlanta, GA: U.S. Department of Health and Human Services, CDC, 1997.

5. Atkinson, W.L.; Orenstein, W.A.; and Krugman, S. The resurgence of measles in the United States, 1989-90. *Annual Review of Medicine* 43:451-463, 1992.

6. Gindler, J.S.; Atkinson, W.L.; Markowitz, L.E.; and Hutchins, S.S. The epidemiology of measles in the United States in 1989-1990. *Pediatric Infectious Disease Journal* 11:841-846, 1992.

7. National Vaccine Advisory Committee. The measles epidemic: The problems, barriers and recommendations. *Journal of the American Medical Association* 266:1547-1552, 1991.

8. CDC. National Immunization Program. Atlanta, GA: CDC, Immunization Services Division, Health Services Research and Evaluation Branch, unpublished data, 1999.

9. CDC. Achievements in Public Health, 1900-1999/Impact of Vaccines Universally Recommended for Children—United States, 1990-1998. *Morbidity and Mortality Weekly Report* 48(12):243-248, 1999.

10. CDC. Notice to readers: National Vaccination Coverage Levels Among Children Aged 19 to 35 Months—United States, 1998. *Morbidity and Mortality Weekly Report* 48(37):829-830, 1999.

11. National Center for Health Statistics. *Healthy People 2000 Review, 1998-99*. Hyattsville, MD: Public Health Service, 1999, 195-205.

12. CDC. Vaccination Coverage by Race/Ethnicity and Poverty Level Among Children Aged 19 to 35 Months—United States, 1996. *Morbidity and Mortality Weekly Report* 46(41):963-968, 1997.

13. CDC. *State Immunization Requirements, 1998-1999*. Washington, DC: U.S. Government Printing Office, 1999, 1-27.

14. CDC. Prevention of Hepatitis A Through Active or Passive Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *Morbidity and Mortality Weekly Report* 48(RR-12):1-37, 1999.

15. CDC. Pneumococcal and influenza vaccination levels among adults aged >

65 years—United States, 1995. *Morbidity and Mortality Weekly Report* 46(39):913-919, 1997.

16. CDC. Progress towards elimination of *Haemophilus influenzae* type b disease among infants and children—United States, 1987-1995. *Morbidity and Mortality Weekly Report* 45(42):901-906, 1996.

17. Schuchat, A.; Robinson, A.K.; and Wenger, J.D. Bacterial Meningitis in the United States in 1995. *New England Journal of Medicine* 337:970-976,1997.

18. CDC. Preventing emerging infectious disease threats: A strategy for the 21st century. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, 1998. Retrieved October 12, 1999 <http://www.cdc.gov/ncidod/emergplan>.

19. U.S. Department of Health and Human Services (DHHS). *Adult Immunization Action Plan, Report of the Workgroup on Adult Immunization.* Washington, DC: the Department, 1997. Retrieved November 23, 1999 <http://www.cdc.gov/od/nvpo/adult.htm>.

20. CDC. Reported vaccine-preventable disease—United States, 1993, and the childhood immunization initiative. *Morbidity and Mortality Weekly Report* 43(4):57-60, 1994.

21. Shefer, A.; Briss, P.; Rodewald, L.; et al. Improving immunization coverage rates: An evidence-based review of the literature. *Epidemiologic Reviews*, 21(1), 1999.

22. Hoekstra, E.J.; LeBaron, C.W.; Megaloeconomou, Y.; et al. Impact of a large-scale immunization initiative in the special supplemental nutrition program for women, infants, and children (WIC). *Journal of the American Medical Association* 280(13):1143-1147, 1998.

23. Abramson, J.S.; O'Shea, T.M.; Ratledge, D.L.; et al. Development of a vaccine tracking system to improve the rate of age-appropriate primary immunization in children of lower socioeconomic status. *Journal of Pediatrics* 126(4):583-586, 1995.

24. CDC. Progress towards elimination of *Haemophilus influenzae* type b disease among infants and children—United States, 1987-1997. *Morbidity and Mortality Weekly Report* 47(46):993-998,1998.

25. CDC. Summary of notifiable disease—United States 1997. *Morbidity and Mortality Weekly Report* 46(54):1-87, 1998.

26. CDC. Prevention of varicella: Recommendations of the advisory committee on immunization practices (ACIP). *Morbidity and Mortality Weekly Report* 45(RR-11):1-36, 1996.

27. CDC. National, State and urban area vaccination coverage levels among children aged 19-35 months—United States, 1997. *Morbidity and Mortality Weekly Report* 47(26):547-554, 1998.

28. Rota, J.S.; Heath, J.L.; Rota, R.A.; et al. Molecular epidemiology of measles virus: Identification of pathways of transmission and implications for measles elimination. *Journal of Infectious Diseases* 173:32-37, 1996.

29. CDC. Measles—United States, 1996 and the interruption of indigenous transmission. *Morbidity and Mortality Weekly Report* 46(11):242-246, 1997.

30. CDC. Epidemiology of Measles-United States, 1998. *Morbidity and Mortality Weekly Report* 48(34):749-753, 1999.

31. Wharton, M. Mumps. In: Wallace, R.B.; Duebbeling, B.N.; Last, J.M.; et al. (eds.). Maxcy-Rosenau-Last. Public Health and Preventive Medicine. 14th ed. Stamford, CT: Appleton & Lange, 1998, 93-95.

32. CDC. Measles, mumps and rubella—vaccine use and strategies for elimination of measles, rubella—and congenital rubella syndrome and control of mumps: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *Morbidity and Mortality Weekly Report* 47(RR-8):1-57, 1998.

33. CDC. Rubella and congenital rubella syndrome—United States, 1994-1997. *Morbidity and Mortality Weekly Report* 46(16):350-354, 1997.

34. Bisgard, K.M.; Hardy, I.R.B.; Popovic, T.; et al. Respiratory diphtheria in the United States, 1980-1995. *American Journal of Public Health* 88:787-791, 1998.

35. CDC. Toxigenic *Corynebacterium diphtheriae*—Northern Plains Indian Community, August-October 1996. *Morbidity and Mortality Weekly Report* 46(22):506-510, 1997.

36. Bardenheier, B.; Prevots, D.R.; Khetsuriani, N.; et al. Tetanus—United States, 1995-1997. *Morbidity and Mortality Weekly Report* 47(SS-2):1-13, 1998.

37. CDC. Pertussis vaccination: Use of acellular pertussis vaccines among infants and young children. *Morbidity and Mortality Weekly Report* 46(RR-7):1-25, 1997.

38. Guris, D.; Strebel, P.M.; Tachdjian, R.; et al. Effec-

tiveness of the pertussis vaccination program as determined by use of the screening method—United States, 1992-1994. *Journal of Infectious Diseases* 176:456-463, 1997.

39. Bisgard, K.M.; Kao, A.; Leake, J.; et al. The epidemiology of *Haemophilus influenzae* invasive disease in the United States, 1994-1995: Near disappearance of a child vaccine preventable disease. *Emerging Infectious Diseases* 4(2):229-237, 1998.

40. CDC. Varicella-related deaths among adults—United States, 1997. *Morbidity and Mortality Weekly Report* 46(19):409-412, 1997.

41. CDC. *Hepatitis Surveillance Report*, No. 56. Atlanta, GA: Centers for Disease Control and Prevention, 1996.

42. CDC. Hepatitis B Virus: A Comprehensive Strategy for Eliminating Transmission in the United States Through Universal Childhood Vaccination: Recommendations of the Immunization Practices Advisory Committee (ACIP). *Morbidity and Mortality Weekly Report* 40(RR-13):1-19, 1991.

43. CDC. Recommendations for Prevention and Control of Hepatitis C Virus (HCV) Infection and HCV-Related Chronic Disease. *Morbidity and Mortality Weekly Report* 47(RR-19):1-39, 1998.

44. CDC. A strategic plan for the elimination of tuberculosis in the United States. *Morbidity and Mortality Weekly Report* 38(S-3):1-25, 1989.

45. American Thoracic Society/CDC. Treatment of Tuberculosis and Tuberculosis Infection in Adults and Children. *American Journal of Respiratory Care Medicine* 149:1359-1374, 1994.

46. CDC. Screening for tuberculosis and tuberculosis infection in high-risk populations. *Morbidity and Mortality Weekly Report*, 44 (RR-11):9-13, 1995.

47. Marshall, B., and Warren, J.R. Unidentified curved bacilli on gastic epithelium in active chronic gastritis. *Lancet* 1:1273-1275, 1983.

48. CDC. Knowledge about causes of peptic ulcer disease–United States. *Morbidity and Mortality Weekly Report* 45(42):985-987, 1997.

49. American Digestive Health Foundation and Opinion Research Corporation. Familiarity with *H. pylori* among adults with digestive disorders and their views toward diagnostic and treatment options. Bethesda, MD: American Digestive Health Foundation and Opinion Research Corporation, 1995.

50. Breuer, T.; Malaty, H.M.; Goodman, K.; et al. Has the scientific evidence about Heliobacter pylori infection in gastrointestinal diseases reached the practicing physicians in the U.S.? *American Journal of Gastroenterology* 91:1905, 1996.

51. CDC. National Center for Infectious Diseases, Division of Bacterial and Mycotic Diseases, Atlanta, GA, 1999.

52. Powell, S.E.; Marcy, S.M.; Phillips, W.R.; et al. Otitis Media–principles of Judicious Use of Antimicrobial Agents. *Pediatrics* 101:165-171, 1998.

53. Redd, S.C.; Markowitz, L.E.; and Katz, S.L. Measles Vaccine. In: Plotkin, S.A. and Orenstein, W.A. (eds.). Vaccines. 3rd ed. Philadelphia, PA: W.B. Saunders Company, 1999, 222-226.

54. Orenstein, W.H.; Hinman, A.R.; and Rodewald, L.E. Public Health Considerations in the United States. In: Plotkin, S.A. and Orenstein, W.A. (eds.). Vaccines. 3rd ed. Philadelphia, PA: W.B. Saunders Company, 1999, 1006-1032.

55. Dowdle, W.R.; Hopkins, D.R., eds. The Eradication of Infectious Diseases. Dahlem Workshop Report. Chichester, NY: John Wiley and Sons, 1997, 1-218.

56. CDC. School Immunization Requirements for Measles—United States, 1981. *Morbidity and Mortality Weekly Report* 30:158-160, 1981.

57. CDC. Notice to readers: Recommended childhood immunization schedule—United States, 1999. *Morbidity and Mortality Weekly Report* 48(1):8-16, 1999.

58. CDC, National Immunization Program, Immunization Services Division. Annual Immunization Assessment Progress—Percentage of Sites Assessed Nationwide in 1997 [chart]. Atlanta, GA: the Center, 1997. Retrieved November 23, 1999 <http://www.cdc.gov/nip/afix/pres/prog/97perc.gif>.

59. Watt, J.; Kahane, S.; Smith, N.; et al. The difference between measured and estimated vaccination coverage among private physicians in California. Presented before the Ambulatory Pediatric Association in New Orleans, LA, May 1998.

60. LeBaron, C.W.; Chaney, M.; Baughman, A.L., et al. Impact of measurement and feedback on vaccination coverage in public clinics, 1988-1994. *Journal of the American Medical Association* 277:631-635, 1997.

61. Dini, E.F.; Chaney, M.; Moolenaar, R.L.; et al. Information as intervention: How

Georgia used vaccination coverage data to double public sector vaccination coverage in seven years. *Journal of Public Health Management Practice* 2(1):45-49, 1996.

62. National Committee for Quality Assurance. The Health Plan Employer Data and Information Set (HEDIS) 3.0/1998, Vol. 2, Technical Specifications. Washington, DC: the Committee, 1997, 38-48.

63. Advisory Committee on Immunization Practices, CDC. Programmatic strategies to increase vaccination rates—assessment and feedback of provider-based vaccination coverage information. *Morbidity and Mortality Weekly Report* 45(10):219-220, 1996.

64. CDC. *Standards for Pediatric Immunization Practices*. Washington, DC: U.S. Government Printing Office, 1993.

65. CDC. National Immunization Program. Atlanta, GA: CDC, Data Management Division, Systems Development Branch, unpublished data, 1999.

66. Sharp, K.; Edgar, T.; and Fowler, K. Findings of Focus Group Research on Immunization Registries. Rockville, MD: Westat, December 1998. Retrieved October 1999 <http://www.cdc.gov/nip/registry/i_fgmenu.htm>.

67. CDC. Immunization of Adolescents: Recommendations of the Advisory Committee on Immunization Practices, the American Academy of Pediatrics, the American Academy of Family Physicians, and the American Medical Association. *Morbidity and Mortality Weekly Report* 45(RR-13):1-16, 1996.

68. Benson, V., and Marano, M.A. Current estimates from the National Health Interview Survey, 1995. National Center for Health Statistics. *Vital Health Statistics* 10(199). 1998.

69. National Center for Health Statistics. *Health—United States, 1994*. Hyattsville, MD: Public Health Service. 1995.

70. Unti, L., and Woodruff, B.A. A review of adolescent school-based hepatitis B vaccination projects: A report prepared for the Centers for Disease Control and Prevention, Hepatitis Branch. Washington, DC: U.S. Department of Health and Human Services, Public Health Service, October 1996.

71. Fedson, D.S. Adult immunization: Summary of the National Vaccine Advisory Committee report. *Journal of the American Medical Association* 272:1133, 1994.

72. CDC. Prevention and control of influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *Morbidity and Mortality Weekly Report* 47(RR-6):1-26, 1998.

73. CDC. Prevention of Pneumococcal Disease: Recommendations of the Advisory Committee on Immunization Practices. *Morbidity and Mortality Weekly Report* 46(RR-8):1-24, 1997.

74. Gyorkos, T.W.; Tannenbaum, T.N.; Abrahamowicz, M.; et al. Evaluation of the effectiveness of immunization delivery methods. *Canadian Journal of Public Health* 85:S14-S30, 1994.

75. Agency for Health Care Policy and Research. *Implementing preventive care*. Retrieved January 6, 1999 <http://www.ahcpr.gov/ppip/handbkiv.htm>.

76. CDC. Notice to Readers: Recommendations of the Advisory Committee on Immunization Practices: Revised Recommendations for Routine Poliomyelitis Vaccination. *Morbidity and Mortality Weekly Report* 48(27):590, 1999.

77. Cody, C.L.; Baraff, L.J.; Cherry, J.D.; et al. Nature and rates of adverse reactions associated with DTP and DT immunizations in infants and children. *Pediatrics* 68:650-660, 1981.

78. CDC. Diphtheria, tetanus, and pertussis: Recommendations for vaccine use and other preventive measures. Recommendations of the Advisory Committee on Immunization Practices. *Morbidity and Mortality Weekly Report* 40(RR-10):1-28, 1991.

79. Stratton, K.R.; Howe, C.J.; and Johnston, Jr., R.B. *Adverse Events Associated with Childhood Vaccines—Evidence Bearing on Causality*. Washington, DC: National Academy Press, 1994.

80. Howson, C.P.; Howe, C.J.; and Fineberg, F.V. *Adverse Effects of Pertussis and Rubella Vaccines*. Washington, DC: National Academy Press, 1991.

81. Chen, R.T.; Glasser, J.W.; Rhodes, P.H.; et al. The Vaccine Safety Datalink Project: A new tool for improving vaccine safety monitoring in the United States. *Pediatrics* 99:765-773, 1997.

15

Injury and Violence Prevention

Lead Agency: Centers for Disease Control and Prevention

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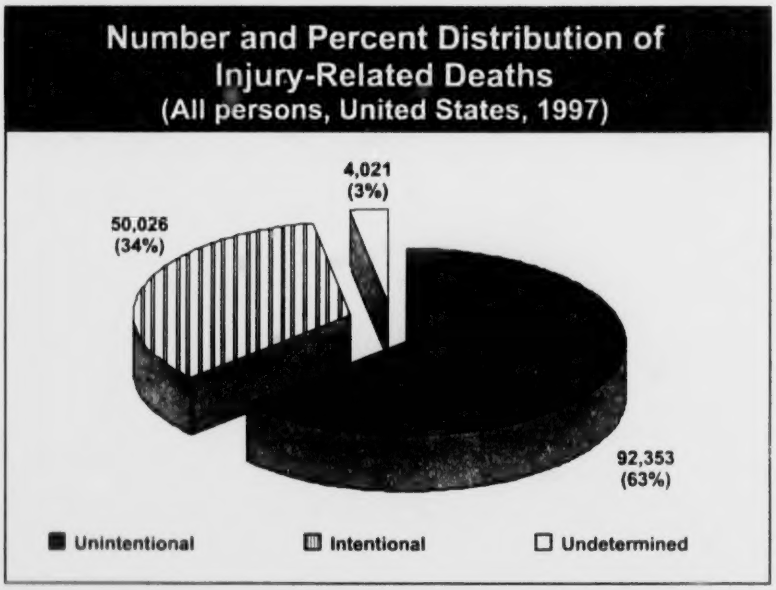
Goal

Reduce injuries, disabilities, and deaths due to unintentional injuries and violence.

Overview

The risk of injury is so great that most persons sustain a significant injury at some time during their lives.[1] Nevertheless, this widespread human damage too often is taken for granted, in the erroneous belief that injuries happen by chance and are the result of unpreventable "accidents." In fact, many injuries are not "accidents," or random, uncontrollable acts of fate; rather, most injuries are predictable and preventable.[2]


Number and Percent Distribution of Injury-Related Deaths
(All persons, United States, 1997)

Source: National Vital Statistics System (NVSS), CDC, NCHS, 1997.

Issues and Trends

Injury Prevention

In 1997, 149,691 Americans died from injuries due to a variety of causes such as motor vehicle crashes, firearms, poisonings, suffocation, falls, fires, and drownings. About 400 persons die from injuries each day, including 55 children and teenagers. One death out of every 17 in the United States results from injury.[3] Of these deaths, 67 percent are classified as unintentional and 33 percent as intentional. Unintentional injury deaths include approximately 42,000 resulting from motor vehicle crashes per year. In 1997, of approximately 50,000 intentional injury deaths, almost 31,000 were classified as suicide and nearly 20,000 as homicide.[1] In 1997, injuries accounted for 20 percent more years of potential life lost (YPPL) than cancer did (1,990/100,000 compared to 1,500/100,000).[4]

For ages 1 through 44 years, deaths from injuries far surpass those from cancer—the overall leading natural cause of death at these ages—by about 3 to 1. Injuries cause more than two out of five deaths (43 percent) of children aged 1 through 4 years and result in 4 times the number of deaths due to birth defects, the second leading cause of death for this age group. For ages 15 to 24 years, injury deaths exceed deaths from all other causes combined from ages 5 through 44 years. For ages 15 to 24 years, injuries are the cause of nearly four out of five deaths. After age 44 years, injuries account for fewer deaths than other health problems, such as heart disease, cancer, and stroke. However, despite the decrease in the proportion of deaths due to injury, the death rate from injuries is actually higher among older persons than among younger persons.

Injuries are often classified on the basis of events and behaviors that preceded them, as well as the intent of the persons involved. For example, many injuries are preceded by alcohol consumption in amounts or circumstances that increase risk of injury.[5] Although the events leading to an intentional and unintentional injury differ, the outcomes and extent of the injury are similar.

Unintentional Injury Prevention

More persons aged 1 to 34 years die as a result of unintentional injuries than any other cause of death. Across all ages, 95,644 persons died in 1997 as a result of unintentional injuries. Motor vehicle crashes account for approximately half the deaths from unintentional injuries; other unintentional injuries rank second, and falls rank third, followed by poisonings, suffocations, and drownings.[6]

Additional millions of persons are incapacitated by unintentional injuries, with many suffering lifelong disabilities. These events occur disproportionately among the young and the elderly. In 1995, 29 million persons visited emergency departments (EDs) as a result of unintentional injuries.[7]

Although the greatest impact of injury is in human suffering and loss of life, the financial cost is staggering. Included in the costs associated with injuries are the costs of direct medical care and rehabilitation as well as lost income and productivity. By the late 1990s, injury costs were estimated at more than $224 billion annually, an increase of 42 percent over the 1980s.[8] As with other health problems, it costs far less to prevent injuries than to treat them. For example:

- Every child safety seat saves $85 in direct medical costs and an additional $1,275 in other costs.
- Every bicycle helmet saves $395 in direct medical costs and other costs.

- Every smoke detector saves $35 in direct medical costs and an additional $865 in other costs.

- Every dollar spent on poison control centers saves $6.50 in medical costs.[9]

Several themes become evident when examining reports on injury prevention and control, including acute care, treatment, and rehabilitation. First, unintentional injury comprises a group of complex problems involving many different sectors of society. No single force working alone can accomplish everything needed to reduce the number of injuries. Improved outcomes require the combined efforts of many fields, including health, education, transportation, law, engineering, and safety sciences. Second, many of the factors that cause unintentional injuries are closely associated with violent and abusive behavior. Injury prevention and control addresses both unintentional and intentional injuries.

Violence and Abuse Prevention

Violence in the United States is pervasive and can change quality of life. Reports of children killing children in schools are shocking and cause parents to worry about the safety of their children at school. Reports of gang violence make persons fearful for their safety. Although suicide rates began decreasing in the mid 1990s, prior increases among youth aged 10 to 19 years and adults aged 65 years and older have raised concerns about the vulnerability of these population groups. Intimate partner violence and sexual assault threaten people in all walks of life.

Violence claims the lives of many of the Nation's young persons and threatens the health and well-being of many persons of all ages in the United States. On an average day in America, 53 persons die from homicide and a minimum of 18,000 persons survive interpersonal assaults, 84 persons complete suicide, and as many as 3,000 persons attempt suicide. (See Focus Area 18. Mental Health and Mental Disorders.)[10]

Youth continue to be involved as both perpetrators and victims of violence. The elderly, females, and children continue to be targets of both physical and sexual assaults, which are frequently perpetrated by individuals they know. Examples of general issues that impede the public health response to progress in this area include the lack of comparable data sources, lack of standardized definitions and definitional issues, lack of resources to adequately establish consistent tracking systems, and lack of resources to fund promising prevention programs.

Because national data systems will not be available in the first half of the decade for tracking progress, one subject of interest, maltreatment of elders, is not addressed in this focus area's objectives. The maltreatment of persons aged 60 years and older is a topic for research and data collection for the coming decade.

Disparities

While every person is at risk for injury, certain types of injuries appear to affect some groups more frequently. American Indians or Alaska Natives have disproportionately higher death rates from motor vehicle crashes, residential fires, and drownings. In addition, their death rates are about 1.75 times higher than the death rate for the overall U.S. population. Higher death rates from unintentional injury also occur among African Americans.[1]

Certain racial and ethnic groups have more new cases of unintentional injuries and deaths than whites. Unintentional injuries are the second leading cause of death for American Indian males and the third leading cause of death for American Indian females. More than 1,000 American Indians die from injuries, and 10,000 more are hospitalized for injuries each year. The age-adjusted injury death rate for American Indians is 3 times higher than that of all other Americans. Among American Indians, 46 percent of the YPLL is a result of injury, which is 5 times greater than the YPLL due to a next highest cause, heart disease (8 percent). Among the factors that contribute to these increased rates for American Indians are rural or isolated living, minimal emergency medical services, and great distances to sophisticated trauma care.[11]

African American, Hispanic, and American Indian children are at higher risk than white children for home fire deaths.[12] Adults aged 65 years and older are at increased risk of death from fire because they are more vulnerable to smoke inhalation and burns and are less likely to recover. Sense impairment (such as blindness or hearing loss) may prevent older adults from noticing a fire, and mobility impairment may prevent them from escaping its consequences. Older adults also are less likely to have learned fire safety behavior and prevention information, since they grew up at a time when little fire safety was taught in schools, and most current educational programs target children.

In every age group, drowning rates are almost 2 to 4 times greater for males than for females.[13] In 1997, the overall drowning rate for African Americans was 50 percent greater than that for whites; however, the rate was not higher for all age groups. For example, among children aged 1 through 4 years, the drowning rate for whites was slightly higher than the rate for African Americans. For children aged 5 to 19 years, African American children are twice as likely to drown as white children.[14]

Homicide victimization is especially high among African American and Hispanic youths. In 1995, African American males and females aged 15 to 24 years had homicide rates (74.4/100,000) that were more than twice the rate of their Hispanic counterparts (34.1/100,000) and nearly 14 times the rate of their white non-Hispanic counterparts (5.4/100,000).[15]

Trends in suicide among blacks aged 10 to 19 years in the United States during 1980-95 indicate that suicidal behavior among all youth has increased: however, rates for black youth have shown a greater increase.[1]

Although black youth historically have lower suicide rates than have whites, during 1980-95, the suicide rate for black youths aged 10 to 19 years increased from 2.1 to 4.5 per 100,000 population. As of 1995, suicide was the third leading cause of death among blacks aged 15 to 19 years.[17]

Opportunities

To reduce the number and severity of injuries, prevention activities must focus on the type of injury—drowning, fall, fire or burn, firearm, or motor vehicle.[18] For example, a nonfatal spinal cord injury produces the same outcome whether it was caused by an unintentional motor vehicle crash or an attempted suicide.

Understanding injuries allows for development and implementation of effective prevention interventions. Some interventions can reduce injuries from both unintentional and violence-related episodes. For instance, efforts to promote proper storage of firearms in homes can help reduce the risk of assaultive, intentional self-inflicted, and unintentional shootings in the home.[19] Higher taxes on alcoholic beverages are associated with lower death rates from motor vehicle crashes and lower rates for some categories of violent crime, including rape.[20, 21]

Many injuries and injury-related deaths occur in some population groups (such as younger children from birth to 4 years) where the intentionality of the injury is unknown and requires more detailed investigation. As these cases are examined, interventions can be developed to address ways injuries occur—for instance, unintentional poisonings in children or hangings among teenagers—that are emerging in society as growing public health concerns.

Poverty, discrimination, lack of education, and lack of employment opportunities are important risk factors for violence and must be addressed as part of any comprehensive solution to the epidemic of violence. Strategies for reducing violence should begin early in life, before violent beliefs and behavioral patterns can be adopted.

Many potentially effective culturally and linguistically competent intervention strategies for violence prevention exist, such as parent training, mentoring, home visitation, and education.[22] Evaluation of ongoing programs is a major component to help identify effective approaches for violence prevention. The public health approach to violence prevention is multidisciplinary, encouraging experts varying from scientific disciplines, organizations, and communities to work together to find solutions to violence in our Nation.

Many school-aged children suffer disabling and fatal injuries each year. As educational programs for school children are developed and proven effective in preventing injuries, these programs should be included in quality health education curricula at the appropriate grade level. Education should aim at reducing risks of injury directly and at preparing children to be knowledgeable adults. (See Focus Area 7. Educational and Community-Based Programs.)

Interim Progress Toward Year 2000 Objectives

A total of 45 objectives addressed injury prevention in Healthy People 2000. Twenty-six objectives were specific for unintentional injuries and 19 objectives were specific for violence prevention. By the end of the decade, targets had been met for 11 objectives. Unintentional injury objectives showing achievement were unintentional injury hospitalizations, residential fire deaths, nonfatal head injuries, spinal cord injuries, nonfatal poisonings, and pedestrian deaths. Violence prevention objectives which met their targets were homicide, suicide, weapon carrying by adolescents, conflict resolution in schools, and child death review systems.

Progress was made for 13 objectives. Much of the progress made in unintentional injury objectives were with motor vehicle fatalities and use of vehicle occupant restraints. Those unintentional injury objectives showing progress were unintentional injury deaths, motor vehicle deaths, motor vehicle crash deaths, motor vehicle occupant protection systems, helmet use by motorcyclists and bicyclists, safety belt use laws, alcohol-related motor vehicle deaths, and drownings. Violence prevention objectives showing progress were firearm-related deaths, partner abuse, rape and attempted rape, physical fighting among adolescents 14 to 17 years of age, and the number of States with firearm storage laws.

There were six objectives with no progress or movement away from the Healthy People 2000 targets. In unintentional injury, the hospitalization rate for hip fractures remains above baseline levels, indicating no progress toward the year 2000 target. Data from five violence prevention objectives also show movement away from the year 2000 target. Those objectives relate to child abuse and neglect, assault injuries, suicide attempts among adolescents aged 14 to 17 years, battered women turned away from shelters, and suicide prevention protocols in jails.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99*.

Injury and Violence Prevention

Goal: Reduce disabilities, injuries, and deaths due to unintentional injuries and violence.

Number	Objective
Injury Prevention	
15-1	Nonfatal head injuries
15-2	Nonfatal spinal cord injuries
15-3	Firearm-related deaths
15-4	Proper firearm storage in homes
15-5	Nonfatal firearm-related injuries
15-6	Child fatality review
15-7	Nonfatal poisonings
15-8	Deaths from poisoning
15-9	Deaths from suffocation
15-10	Emergency department surveillance systems
15-11	Hospital discharge surveillance systems
15-12	Emergency department visits
Unintentional Injury Prevention	
15-13	Deaths from unintentional injuries
15-14	Nonfatal unintentional injuries
15-15	Deaths from motor vehicle crashes
15-16	Pedestrian deaths
15-17	Nonfatal motor vehicle injuries
15-18	Nonfatal pedestrian injuries
15-19	Safety belts
15-20	Child restraints
15-21	Motorcycle helmet use
15-22	Graduated driver licensing
15-23	Bicycle helmet use
15-24	Bicycle helmet laws
15-25	Residential fire deaths

15-26	Functional smoke alarms in residences
15-27	Deaths from falls
15-28	Hip fractures
15-29	Drownings
15-30	Dog bite injuries
15-31	Injury protection in school sports

Violence and Abuse Prevention

15-32	Homicides
15-33	Maltreatment and maltreatment fatalities of children
15-34	Physical assault by intimate partners
15-35	Rape or attempted rape
15-36	Sexual assault other than rape
15-37	Physical assaults
15-38	Physical fighting among adolescents
15-39	Weapon carrying by adolescents on school property

Injury Prevention

15-1. Reduce hospitalization for nonfatal head injuries.

Target: 54 hospitalizations per 100,000 population.

Baseline: 75.5 hospitalizations for nonfatal head injuries per 100,000 population in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

Total Population, 1997	Hospitalizations for Nonfatal Head Injuries
	Rate per 100,000
TOTAL	75.5
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	88.5
White	55.3
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	51.8
Male	98.5
Education level	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC

Total Population, 1997	Hospitalizations for Nonfatal Head Injuries Rate per 100,000
Select populations	
Males aged 15 to 25 years	157.3
Persons aged 75 years and older	225.4

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.

15-2. Reduce hospitalization for nonfatal spinal cord injuries.

Target: 2.6 hospitalizations per 100,000 population.

Baseline: 4.8 hospitalizations for nonfatal spinal cord injuries per 100,000 population in 1997 (age adjusted to the year 2000 standard population).

Target setting method: 46 percent improvement. (Better than the best will be used when data are available.)

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

Total Population, 1997	Hospitalizations for Nonfatal Spinal Cord Injuries Rate per 100,000
TOTAL	4.8
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DSU
White	2.7
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	DSU
Male	6.1

Total Population, 1997	Hospitalizations for Nonfatal Spinal Cord Injuries Rate per 100,000
Education level	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

The physical and emotional toll associated with head and spinal cord injuries can be significant for the survivors and their families. Persons with existing disabilities from head and spinal cord injuries are at high risk for further secondary disabilities. Prevention efforts should target motor vehicle crashes, falls, firearm injury, diving, and water safety.

Approximately 5 percent of the persons who sustained a brain injury each year and who do not experience a good recovery were injured with a firearm. About 12 percent of the new cases of quadriplegia and paraplegia each year are attributable to spinal cord injuries related to firearms.[23]

Motor vehicle crashes cause 44 percent of all spinal cord injuries.

Among pedalcyclists killed, most died from head injuries. Similarly, the common cause of death among motorcyclists is catastrophic head injury. Death rates from head injuries have been shown to be twice as high among cyclists in States lacking helmet laws or laws that apply only to young riders, compared with States where laws apply to all riders.

Falls account for 87 percent of all fractures among adults aged 65 years and older and are the second leading cause of both spinal cord injury and brain injury for this age group.[24, 25] Falls also cause the majority of deaths and severe injuries from head trauma among children under age 14 years. Falls account for 90 percent of the most severe playground-related injuries treated in hospital emergency departments (mostly head injuries and fractures) and one-third of reported fatalities. Head injuries are involved in about 75 percent of all reported fall-related deaths associated with playground equipment.

Many diving-related incidents also result in spinal cord injury. Diving-related injury first becomes an issue during adolescence. Injuries to males outnumber injuries to females. Diving injuries account for one of eight spinal cord injuries, with half of those injuries resulting in quadriplegia.[26]

15-3. Reduce firearm-related deaths.

Target: 4.9 deaths per 100,000 population.

Baseline: 11.0 deaths per 100,000 population were related to firearm injuries in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Firearm-Related Deaths** Rate per 100,000
TOTAL	12.1
Race and ethnicity	
American Indian or Alaska Native	11.4
Asian or Pacific Islander	5.0
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	22.9
White	10.4
Hispanic or Latino	10.7
Cuban	13.1
Mexican	11.1
Puerto Rican	8.5
Not Hispanic or Latino	12.1
Black or African American	23.7
White	10.0
Gender	
Female	3.4
Male	21.4
Education level (aged 25 to 64 years)	
Less than high school	22.9
High school graduate	18.3
At least some college	7.4

Total Population, 1997*	Firearm-Related Deaths Rate per 100,000
Select firearm-related deaths	
Homicides	4.9
Suicides	6.6
Unintentional	0.4

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

15-4. Reduce the proportion of persons living in homes with firearms that are loaded and unlocked.

Target: 16 percent.

Baseline: 19 percent of the population lived in homes with loaded and unlocked firearms in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Total Population, 1994*	Loaded, Unlocked Firearms in Home Percent
TOTAL	20
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	24
White	20
Hispanic or Latino	DSU
Not Hispanic or Latino	20
Black or African American	25
White	20

Total Population, 1994*	Loaded, Unlocked Firearms in Home Percent
Gender	
Female	18
Male	22
Education level (aged 25 years and older)	
Less than high school	23
High school graduate	19
At least some college	20

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

15-5. Reduce nonfatal firearm-related injuries.

Target: 10.9 injuries per 100,000 population.

Baseline: 26 nonfatal firearm-related injuries per 100,000 population in 1996.

Target setting method: Better than the best.

Data source: National Electronic Injury Surveillance System (NEISS), Consumer Product Safety Commission (CPSC).

Total Population, 1996	Nonfatal Firearm-Related Injuries Rate per 100,000
TOTAL	26
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	DNA
White	DNA
Hispanic or Latino	35
Not Hispanic or Latino	DNA
Black or African American	93
White	11

Total Population, 1996	Nonfatal Firearm-Related Injuries Rate per 100,000
Gender	
Female	6
Male	47
Education level	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC
Select populations	
Males aged 15 to 24 years	152

DNA =Data have not been analyzed. DNC = Data are not collected. DSU =Data are statistically unreliable.

The United States has the highest rates of lethal childhood violence than every other industrialized country.[27] The increase in the total homicide rate from 1979 through 1993 resulted solely from increases in firearms homicides.[28] Fatalities, however, are only part of the problem. For each of the 35,957 persons killed by a gunshot wound in the United States in 1995, approximately 3 more received nonfatal wounds.[29]

15-6. (Developmental) Extend State-level child fatality review of deaths due to external causes for children aged 14 years and under.

Potential data sources: National Vital Statistics System (NVSS), CDC, NCHS; Inter-Agency Council on Child Abuse and Neglect (ICAN) National Database, FBI Uniform Crime Report, U.S. Department of Justice.

Death resulting from injury is one of the most profound public health issues facing children in the United States today. In 1997, nearly 19,000 children aged 19 years and under were victims of injury—33 percent from violence and 67 percent from unintentional injury.[30]

In examination of these trends in childhood injury-related cause of death, information has typically come from one of several sources (vital statistics, protective service records, and the FBI Uniform Crime Report), each with specific limitations. In response to the increasing trend of violence against children and the lack of a comprehensive data source on violent childhood deaths, the Child Fatality Review Team (CFRT) process was developed in 1978 in California.

The goal of the CFR teams is the prevention of childhood fatalities. Their responsibility is to review so-called "suspicious" or "preventable" childhood fatalities.

Minimal or core standards for CFR teams must include representatives from criminal justice, health, and social services. After integrating information from multiple sources, review teams strive to determine if the cause and manner of death were recorded accurately and suggest prevention initiatives for all relevant agencies. Simply reviewing fatalities is not helpful unless recommendations for prevention also are included and plans are made for periodic followup to ensure that recommendations are being acted on.

Focusing on children aged 14 years and under will include most "unexplained" childhood deaths and is considered a more reasonable goal to achieve. However, States should continue to improve their CFRT systems. Teams with adequate resources are encouraged to extend their review to all causes of death for all children aged 18 years and under as their ultimate goal. CFR teams also should include culturally appropriate members.

15-7. Reduce nonfatal poisonings.

Target: 292 nonfatal poisonings per 100,000 population.

Baseline: 348.4 nonfatal poisonings per 100,000 population in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data sources: National Hospital Ambulatory Medical Care System (NHAMCS), CDC, NCHS; NEISS, CPSC.

Total Population, 1997 (unless noted)	Nonfatal Poisonings Rate per 100,000
TOTAL	348.4
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	464.5
White	340.6
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU

Total Population, 1997 (unless noted)	Nonfatal Poisonings Rate per 100,000
Gender	
Female	410.9
Male	281.6
Education level	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC
Select populations of poisonings	
Assault or attempted homicide	6 (1996)
Intentional suicide attempts	63 (1996)
Unintentional poisonings	268 (1996)
Children aged 4 years and under	460

DNA =Data have not been analyzed. DNC =Data are not collected. DSU =Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

15-8. Reduce deaths caused by poisonings.

Target: 1.8 death per 100,000 population.

Baseline: 5.8 deaths per 100,000 population were caused by poisonings in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data sources: National Vital Statistics System (NVSS), CDC, NCHS; NEISS, CPSC.

Total Population, 1997* (unless noted)	Poisoning Deaths Rate per 100,000
TOTAL	6.6
Race and ethnicity	
American Indian or Alaska Native	8.0
Asian or Pacific Islander	2.0
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	8.1
White	6.6

Total Population, 1997* (unless noted)	Poisoning Deaths Rate per 100,000
Hispanic or Latino	5.7
Cuban	3.1
Mexican	4.6
Puerto Rican	12.7
Not Hispanic or Latino	6.7
Black or African American	8.3
White	6.6
Gender	
Female	3.9
Male	9.4
Education level (aged 25 to 64 years)	
Less than high school	16.2
High school graduate	13.8
At least some college	5.7
Select populations	
Unintentional poisoning	3.3 (1996)
Suicide	2.0 (1996)
Homicide	DSU (1996)

DNA =Data have not been analyzed. DNC =Data are not collected. DSU =Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Children are at significantly greater risk from poisoning death and exposure than adults because children are more likely to ingest potentially harmful chemicals. In 1995, 80 children aged 14 years and under died from poisoning. Children aged 4 years and under accounted for nearly half of these deaths. In 1996, more than 1.1 million unintentional poisonings among children aged 5 years and under were reported to U.S. poison control centers. Approximately 90 percent of all poison exposures occur at a residence.[31]

In 1996, 29 children aged 5 years and under died from exposure to medicines and household products. Among children aged 5 years and under, 60 percent of poisoning exposures come from nonpharmaceutical products such as cosmetics, cleaning substances, plants, foreign bodies, toys, pesticides and art supplies; 40 percent come from pharmaceuticals. Immediately calling a poison control center can reduce the likelihood of severe poisoning, decrease the cost of a poisoning incident, and prevent the need for a hospital emergency department (ED) visit.

The total annual cost of poisoning-related injury and death exceeds $7.6 billion among children aged 14 years and under. Children aged 4 years and under account for $5.1 billion, or two-thirds, of these costs. Medical expenses associated with a poisoning exposure average $925 per case. The average cost of hospital treatment for a poisoning exposure is $8,700.[32]

15-9. Reduce deaths caused by suffocation.

Target: 2.9 death per 100,000 population.

Baseline: 4.0 deaths per 100,000 population were caused by suffocation in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Suffocation Deaths**
	Rate per 100,000
TOTAL	4.0
Race and ethnicity	
American Indian or Alaska Native	6.2
Asian or Pacific Islander	3.8
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	4.5
White	3.9
Hispanic or Latino	3.0
Not Hispanic or Latino	4.1
Black or African American	4.6
White	4.0
Gender	
Female	2.3
Male	5.9
Education level (aged 25 to 64 years)	
Less than high school	6.1
High school graduate	4.8
At least some college	2.1

Total Population, 1997*	Suffocation Deaths Rate per 100,000
Select Populations	
Homicide	DNA
Suicide	DNA
Unintentional	DNA

DNA =Data have not been analyzed. DNC = Data are not collected. DSU =Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

In 1997, 10,650 persons died from suffocation. In the same year, 934 children aged 14 years and under died from suffocation. Of these children, 64 percent were aged 4 years and under.[33] Approximately 5,000 children aged 14 years and under are treated in hospital EDs for aspirating and ingesting toys and toy parts each year. The majority of childhood suffocations, strangulations, and chokings occur in the home. The total annual cost of airway obstruction injury among children aged 14 and under exceeds $1.5 billion. Children aged 4 years and under account for more than 60 percent of these costs. It is estimated that as many as 30 percent of the infants whose deaths are attributed to Sudden Infant Death Syndrome (SIDS) each year are found in potentially suffocating environments, frequently on their stomachs, with their noses and mouths covered by soft bedding.[34]

15-10. Increase the number of States and the District of Columbia with statewide emergency department surveillance systems that collect data on external causes of injury.

Target: All States and the District of Columbia.

Baseline: 12 States had statewide ED surveillance systems that collected data on external causes of injury in 1998.

Target setting method: Total coverage.

Data source: External Cause of Injury Survey, American Public Health Association (APHA), September 1998.

15-11. Increase the number of States and the District of Columbia that collect data on external causes of injury through hospital discharge data systems.

Target: All States and the District of Columbia.

Baseline: 23 States collected data on external causes of injury through hospital discharge data systems in 1998.

Target setting method: Total coverage.

Data source: External Cause of Injury Survey, American Public Health Association (APHA).

15-12. Reduce hospital emergency department visits caused by injuries.

Target: 112 hospital emergency department visits per 1,000 population.

Baseline: 130 hospital emergency department visits per 1,000 population were caused by injury in 1997.

Target setting method: Better than the best.

Data source: National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

Total Population, 1997	**Injury-Related Hospital Emergency Department Visits**
	Rate per 1,000
TOTAL	130
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	180
White	125
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU

Gender	
Female	115
Male	145
Education level	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Emergency department (ED) patient records and hospital discharge systems are an important source of public health surveillance and an integral part of the vision of electronically linked health information systems that can serve multiple purposes. Because of the volume and case mix of patients they treat, EDs are well positioned to provide data on cause and severity of injuries. Access to such data can help with the development of population-based public health interventions.

Unintentional Injury Prevention

15-13. Reduce deaths caused by unintentional injuries.

Target: 20.8 deaths per 100,000 population.

Baseline: 33.3 deaths per 100,000 population were caused by unintentional injuries in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Unintentional Injury Deaths** Rate per 100,000
TOTAL	34.8
Race and ethnicity	
American Indian or Alaska Native	62.7
Asian or Pacific Islander	20.9
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	40.9
White	34.3

Total Population, 1997*	Unintentional Injury Deaths Rate per 100,000
Hispanic or Latino	30.1
Cuban	23.2
Mexican	32.1
Puerto Rican	27.7
Not Hispanic or Latino	35.1
Black or African American	40.9
White	34.2
Gender	
Female	21.8
Male	49.2
Education level (aged 25 to 64 years)	
Less than high school	51.6
High school graduate	39.9
At least some college	17.2
Select populations	
Black or African American male	60.3
American Indian or Alaska Native male	89.6
Hispanic male	45.4
White male	48.4

DNA =Data have not been analyzed. DNC = Data are not collected. DSU =Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

15-14. (Developmental) Reduce nonfatal unintentional injuries.

Potential data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

15-15. Reduce deaths caused by motor vehicle crashes.

Target: 9.0 deaths per 100,000 population for 15-15a and 1 death per 100 million vehicle miles traveled (VMT) for 15-15b.

Baseline: 15.0 deaths per 100,000 population were caused by motor vehicle crashes in 1998 (preliminary data; age adjusted to the year 2000 standard population) for 15-15a and 2 deaths per 100 million VMT were caused by motor vehicle crashes in 1997 for 15-15b.

Target setting method: Better than the best for 15-15a; 50 percent improvement for 15-15b. (Better than the best will be used when data are available.)

Data sources: National Vital Statistics System (NVSS), CDC, NCHS; Federal Highway Administration (FHWA).

Total Population, 1997* (unless noted)	**Motor Vehicle Crash Deaths** **15-15a.** Rate per 100,000	**Motor Vehicle Crash Deaths** **15-15b.** Rate per 100 Million VMT
TOTAL	15.8	2
Race and ethnicity		
American Indian or Alaska Native	31.5	DNC
Asian or Pacific Islander	10.6	DNC
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	17.0	DNC
White	15.8	DNC
Hispanic or Latino	15.2	DNC
Cuban	13.9	DNC
Mexican	17.1	DNC
Puerto Rican	9.1	DNC
Not Hispanic or Latino	16.3	DNC
Black or African American	17.8	DNC
White	16.1	DNC
Gender		
Female	10.4	DNA
Male	21.7	DNA
Education level (aged 25 to 64 years)		
Less than high school	25.0	DNC
High school graduate	20.7	DNC

Total Population, 1997* (unless noted)	Motor Vehicle Crash Deaths 15-15a. Rate per 100,000	 15-15b. Rate per 100 Million VMT
Select populations		
Children aged 14 years and under	4.2 (1998)	DNA
Persons aged 15 to 24 years	25.4 (1998)	DNA
Persons aged 70 years and older	24.3 (1998)	DNA
Motorcyclists	NA	21.3

DNA =Data have not been analyzed. DNC =Data are not collected. DSU =Data are statistically unreliable. NA: Not applicable.

Note: Age adjusted to the year 2000 standard population; 1998 data are preliminary.

*New data for population groups will be added when available.

15-16. Reduce pedestrian deaths on public roads.

Target: 1 pedestrian death per 100,000 population.

Baseline: 2 pedestrian deaths per 100,000 population occurred on public roads in 1997.

Target setting method: 50 percent improvement. (Better than the best will be used when data are available.)

Data source: Fatality Analysis Reporting System (FARS), DOT, NHTSA.

Total Population, 1997	Pedestrian Deaths on Public Roads Rate per 100,000
TOTAL	2
Gender	
Female	1
Male	3
Select populations	
Persons aged 70 years and older	4

Data for other population groups currently are not collected.

15-17. Reduce nonfatal injuries caused by motor vehicle crashes.

Target: 1,000 nonfatal injuries per 100,000 population.

Baseline: 1,270 nonfatal injuries per 100,000 population were caused by motor vehicle crashes in 1997.

Target setting method: 21 percent improvement. (Better than the best will be used when data are available.)

Data source: General Estimates System (GES), DOT, NHTSA.

Total Population, 1997	Nonfatal Motor Vehicle Crash Injuries
	Rate per 100,000
TOTAL	1,270
Select populations	
Persons aged 16 to 20 years	3,116
Persons aged 21 to 24 years	2,496

Data for other population groups currently are either not collected or not analyzed.

15-18. Reduce nonfatal pedestrian injuries on public roads.

Target: 21 nonfatal injuries per 100,000 population.

Baseline: 29 nonfatal pedestrian injuries per 100,000 population occurred on public roads in 1997.

Target setting method: 28 percent improvement. (Better than the best will be used when data are available.)

Data source: General Estimates System (GES), DOT, NHTSA.

Total Population, 1997	Nonfatal Pedestrian Injuries on Public Roads Rate per 100,000
TOTAL	29
Select populations	
Persons aged 5 to 9 years	56
Persons aged 10 to 15 years	46
Persons aged 16 to 20 years	36

Data for other population groups currently are either not collected or not analyzed.

15-19. Increase use of safety belts.

Target: 92 percent.

Baseline: 69 percent of the total population used safety belts in 1998.

Target setting method: 33 percent improvement. (Better than the best will be used when data are available.)

Data sources: National Occupant Protection Use Survey (NOPUS), DOT, NHTSA; Youth Risk Behavior Survey (YRBS), NCCDPHP.

Total Population, 1998	Safety Belt Use Percent
TOTAL	69
Select populations	
9th through 12th grade students	81

Data for other population groups currently are not collected.

15-20. Increase use of child restraints.

Target: 100 percent.

Baseline: 92 percent of motor vehicle occupants aged 4 years and under used child restraints in 1998 (preliminary data).

Target setting method: Total coverage.

Data source: National Occupant Protection Use Survey (NOPUS), Controlled Intersection Study, DOT, NHTSA.

Data for population groups currently are not collected.

15-21. Increase the proportion of motorcyclists using helmets.

Target: 79 percent.

Baseline: 67 percent of motorcycle operators and passengers used helmets in 1997.

Target setting method: 18 percent improvement. (Better than the best will be used when data are available.)

Data sources: National Occupant Protection Use Survey (NOPUS), DOT, NHTSA; Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Motorcyclists, 1997	**Helmet Use** Percent
TOTAL	67
Select populations	
9th through 12th grade students	64

Data for other population groups currently are not collected.

15-22. Increase the number of States and the District of Columbia that have adopted a graduated driver licensing model law.

Target: All States and the District of Columbia.

Baseline: 23 States had a graduated driver licensing model law in 1999.

Target setting method: Total coverage.

Data source: U.S. Licensing Systems for Young Drivers, Insurance Institute for Highway Safety.

Motor vehicle crashes remain a major public health problem. They are the leading cause of death for persons in the United States aged 5 to 29 years. In 1998, 41,471 persons died in motor vehicle crashes.[35] Thirty-eight percent of these deaths occurred in alcohol-related crashes.[35] The motor vehicle death rate per 100,000 persons is especially high among persons aged 16 to 24 years and persons aged 75 years and older. Safety belts, when worn correctly, are the most effective way for occupants to reduce the risk of death and serious injury in a motor vehicle crash on public roads (including those on Indian Reservations). As of December 1998, the national safety belt use rate was 69 percent.

In 1998, 69,000 pedestrians were injured and 5,220 were killed in traffic crashes in the United States. On average, a pedestrian is killed in a motor vehicle crash every 101 minutes, and one is injured every 8 minutes.[36]

In 1998, persons aged 70 years and older made up 9 percent of the population but accounted for 14 percent of all traffic fatalities and 18 percent of all pedestrian fatalities. Compared with the fatality rate for drivers aged 25 through 69 years, the rate for drivers in the oldest group is 9 times higher.[37]

Older persons also are more susceptible than younger persons to medical complications following motor vehicle crash injuries. Thus, they are more likely to die from their injuries.[37]

Fewer persons aged 70 years and older are licensed to drive, compared to younger persons, and they drive fewer miles per licensed driver. Persons in this older age group, however, have higher rates of fatal crashes per mile driven, per 100,000 persons, and per licensed driver than any other group except young drivers (aged 16 to 24 years).

Pedestrians account for about 13 percent of motor vehicle deaths. The problem of pedestrian deaths and injuries is worse among young children and older adults. Children are more likely to be injured, while older adults are more likely to die in pedestrian crashes.[36]

As of December 1997, 49 States had safety belt laws. Eleven States had primary enforcement laws, and the remaining 38 States had secondary enforcement laws.[38] In 1998, the average observed belt use rate by States with secondary enforcement laws was 62 percent, compared to 79 percent in States with primary enforcement laws.[38]

Among children aged 1 to 14 years, crash injuries are the leading cause of death. In 1998, 2,549 children aged 14 years and under died in motor vehicle crashes.[35] The use of age-appropriate restraint systems can reduce this problem. Because all States have child restraint laws, more children now ride restrained. But loopholes in the laws exempt many children from coverage under either safety belt or child restraint use laws. Another problem is the persistence of incorrectly used child restraints and safety belts.[39]

Motorcycles are less stable and less visible than cars, and they have high-performance capabilities. When motorcycles crash, their riders lack the protection of an enclosed vehicle, so they are more likely to be injured or killed. The number of deaths on motorcycles per mile traveled is about 16 times the number of deaths in cars. Wearing a motorcycle helmet reduces the chances of dying in a motorcycle crash by 29 percent and reduces the chances of brain injury by 67 percent. An unhelmeted rider is 40 percent more likely to suffer a fatal head injury, compared with a helmeted rider. In 1998, 2,284 motorcyclists died in crashes.[40]

Teenagers accounted for 10 percent of the U.S. population in 1997 and 15 percent of the motor vehicle deaths. In 1998, 3,427 drivers aged 15 to 20 years were killed, and an additional 348,000 were injured in motor vehicle crashes.[41] Graduated licensing laws allow a young driver to gain driving experience at incremental levels. Graduated licensing is a system for phasing in on-road driving that allows beginners to obtain their initial experience under lower risk conditions.

The National Committee on Uniform Traffic Laws and Ordinances (NCUTLO) has developed a model law that calls for a minimum of 6 months in the learner stage and a minimum of 6 months in the intermediate license stage with night driving restrictions. Twenty-three States have all the core provisions of the model graduated licensing model law developed by NCUTLO. The NCUTLO model also requires applicants for intermediate and full licenses to have no safety belt or zero tolerance violations and to be conviction-free during the mandatory holding periods.

15-23. (Developmental) Increase use of helmets by bicyclists.

Potential data sources: Consumer Product Safety Commission; Behavioral Risk Factor Surveillance System (BRFSS), CDC; World Health Organization Study of Health Behavior in School Children.

15-24. Increase the number of States and the District of Columbia with laws requiring bicycle helmets for bicycle riders.

Target: All States and the District of Columbia.

Baseline: 11 States had laws requiring bicycle helmets for bicycle riders under age 15 years in 1999.

Target setting method: Total coverage.

Data source: Bicycle Helmet Safety Institute.

Head injuries are the most serious type of injury sustained by pedalcyclists of all ages. In 1998, 761 bicyclists were killed in crashes involving motor vehicles, and an additional 53,000 were injured in traffic crashes. Almost one-third (30 percent) of the pedalcyclists killed in traffic crashes in 1998 were between age 5 and 15 years. The proportion of pedalcyclist fatalities among persons aged 25 to 64 years was 1.7 times higher in 1997 than in 1987 (46 percent and 27 percent, respectively).[42] More bicyclists were killed on major roads than on local roads (59 percent compared with 36 percent) in 1997.[43]

Bicycle helmets reduce the risk of bicycle-related head injury by 85 percent.[44] Although no States have bicycle laws that apply to all riders, 15 States have laws that apply to young bicyclists under age 18 years.[45] In addition, several localities have ordinances that require some or all bicyclists to wear helmets. Helmets are important for riders of all ages, especially because older bicyclists represent two-thirds of bicycle deaths.[44]

15-25. Reduce residential fire deaths.

Target: 0.6 deaths per 100,000 population.

Baseline: 1.2 deaths per 100,000 population were caused by residential fires in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Residential Fire Deaths** Rate per 100,000
TOTAL	1.3
Race and ethnicity	
American Indian or Alaska Native	2.2
Asian or Pacific Islander	0.8
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	3.4
White	1.1
Hispanic or Latino	0.8
Cuban	DSU
Mexican	0.7
Puerto Rican	1.4
Not Hispanic or Latino	1.4
Black or African American	3.5
White	1.1
Gender	
Female	1.0
Male	1.7
Education level (aged 25 to 64 years)	
Less than high school	2.0
High school graduate	1.3
At least some college	0.5

Total Population, 1997*	Residential Fire Deaths Rate per 100,000
Select populations	
Persons aged 4 years and younger	2.1
Persons aged 65 years and older	3.5
Black or African American	3.4
Females	2.6
Males	4.5

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

15-26. Increase functioning residential smoke alarms.

Target and baseline:

Objective	Increase in Functioning Residential Smoke Alarm on Every Floor	Baseline	2010 Target
		Percent	
15-26a.	Total population living in residences with functioning smoke alarm on every floor	87 (1994)	100
15-26b.	Residences with a functioning smoke alarm on every floor	87 (1998)	100

Age adjusted to the year 2000 standard population.

Target setting method: Total coverage.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Total Population, 1994	15-26a. Live in Residences With Functioning Smoke Alarm on Every Floor Percent
TOTAL	87
Race and ethnicity	
American Indian or Alaska Native	89
Asian or Pacific Islander	86
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	88
White	86
Hispanic or Latino	90
Not Hispanic or Latino	87
Black or African American	88
White	86
Gender	
Female	87
Male	86
Education level (aged 25 years and older)	
Less than high school	87
High school graduate	87
At least some college	87

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.

In 1997, 3,220 deaths occurred as a result of residential fires. Residential property loss caused by these fires was roughly $4.4 billion. In 1995, the cost of all fire-related deaths and injuries, including deaths and injuries to firefighters, was estimated at $15.8 billion.[46]

Fires are the second leading cause of unintentional injury death among children. Compared to the total population, children aged 4 years and under have a fire death rate more than twice the national average. About 800 children aged 14 years and under die by fire each year, and 65 percent of these children are under age 5 years. Children are disproportionately affected because they react less effectively to fire than adults, and they also generally sustain more severe burns at lower temperatures than adults. Two-thirds of fire-related deaths and injuries among children under age 5 years occur in homes without working smoke alarms.[47]

Working smoke alarms on every level and in every sleeping area of a home can provide residents with sufficient warning to escape from nearly all types of fires. Therefore, working smoke alarms can be highly effective in preventing fire-related deaths. If a fire occurs, homes with smoke alarms are roughly half as likely to have a death occur as homes without smoke alarms.[47]

15-27. Reduce deaths from falls.

Target: 2.3 deaths per 100,000 population.

Baseline: 4.5 deaths per 100,000 population were caused by falls in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Deaths From Falls** Rate per 100,000
TOTAL	4.6
Race and ethnicity	
American Indian or Alaska Native	5.6
Asian or Pacific Islander	3.5
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	3.1
White	4.7
Hispanic or Latino	3.3
Cuban	2.4
Mexican	3.4
Puerto Rican	2.7
Not Hispanic or Latino	4.6
Black or African American	3.1
White	4.7
Gender	
Female	3.3
Male	6.3

Total Population, 1997*	Deaths From Falls Rate per 100,000
Education level (aged 25 to 64 years)	
Less than high school	3.0
High school graduate	2.2
At least some college	1.1
Select populations	
Persons aged 65 to 84 years	16.4
Persons aged 85 years and older	104.9

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

15-28. Reduce hip fractures among older adults.

Target and baseline:

Objective	Reduction in Hip Fractures	1997 Baseline	2010 Target
		Rate per 100,000	
15-28a.	Females aged 65 years and older	1,120.9	491.0
15-28b.	Males aged 65 years and older	563.1	450.5

Target setting method: Better than the best for 15-28a; 20 percent improvement for 15-28b. (Better than the best will be used when data are available.)

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

Adults Aged 65 Years and Older, 1997	Hip Fracture 15-28a. Females	 15-28b. Males
	Rate per 100,000	
TOTAL	1,120.9	563.1
Race and ethnicity		
American Indian or Alaska Native	DSU	DSU
Asian or Pacific Islander	DSU	DSU
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC

Adults Aged 65 Years and Older, 1997	Hip Fracture	
	15-28a. Females	15-28b. Males
	Rate per 100,000	
Black or African American	492.0	DSU
White	932.1	469.4
Hispanic or Latino	DSU	DSU
Not Hispanic or Latino	DSU	DSU
Black or African American	DSU	DSU
White	DSU	DSU
Gender		
Female	DNA	DNA
Male	DNA	DNA
Education level (aged 25 to 64 years)		
Less than high school	DNC	DNC
High school graduate	DNC	DNC
At least some college	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

In 1996, falls became the second leading cause of injury deaths among adults aged 65 years and older. In 1997, 9,023 adults over age 65 years died as a result of falls.[48] Falls are the most common cause of injuries and hospital admissions for trauma among elderly persons. Since most fractures are the result of falls, understanding factors that contribute to falling is essential to designing effective intervention strategies. Alcohol use has been implicated in 35 to 63 percent of deaths from falls.[48a] For persons aged 65 years and older, 60 percent of fatal falls occur in the home, 30 percent occur in public places, and 10 percent occur in health care institutions.

The most serious fall-related injury is hip fracture. Approximately 212,000 hip fractures occur each year in the United States among adults aged 65 years and older; 75 to 80 percent of all hip fractures are sustained by females.[49] The impact of these injuries on the quality of life is enormous. Half of all elderly adults hospitalized for hip fracture cannot return home or live independently after the fracture. The total direct cost of all fall injuries for adults aged 65 years and older in 1994 was $20.2 billion.[50] Factors that contribute to falls include difficulties in gait and balance, neurological and musculoskeletal disabilities, psychoactive medications, dementia, and visual impairment.[51] Environmental hazards such as slippery surfaces, uneven floors, poor lighting on stairs, loose rugs, unstable furniture, grab bars in bathrooms, and objects on floors also may play a role.

15-29. Reduce drownings.

Target: 0.9 drownings per 100,000 population.

Baseline: 1.6 drownings per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS, CPSC.

Total Population, 1997* (unless noted)	Drownings Rate per 100,000
TOTAL	1.5
Race and ethnicity	
American Indian or Alaska Native	3.7
Asian or Pacific Islander	1.6
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	1.9
White	1.4
Hispanic or Latino	1.4
Cuban	DSU
Mexican	1.5
Puerto Rican	1.0
Not Hispanic or Latino	1.5
Black or African American	2.0
White	1.4
Gender	
Female	0.6
Male	2.4
Education level (aged 25 to 64 years)	
Less than high school	2.4
High school graduate	1.7
At least some college	0.8
Geographic location	
Urban	DNA
Rural	DNA

Total Population, 1997* (unless noted)	Drownings Rate per 100,000
Select populations	
Black or African American males	3.4
Children aged 4 years and younger	1.5
Males aged 15 to 34 years	1.8 (1998)

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population; 1998 data are preliminary.

*New data for population groups will be added when available.

In 1997, drownings accounted for over 4,000 deaths in the United States.[52] In 1992, 6,000 crashes involving recreational boats resulted in 3,700 injuries and 816 deaths.[53] Drowning is the second leading cause of injury-related death for children and adolescents aged 1 to 19 years, accounting for 1,502 deaths in 1995.[54]

Most deaths involving diving occur among persons aged 15 to 39 years, with the largest proportion (14.8 percent) occurring among persons aged 30 to 39 years. Many diving-related incidents result in spinal cord injury. Alcohol use is involved in about 50 percent of deaths associated with water recreation.[13]

Backyard swimming pools and spas represent the greatest risk to preschoolers, particularly those 18 to 30 months of age. Of the 600 annual downing deaths of children from birth to 5 years of age, more than 300 occur in residential swimming pools. Annually, approximately 2,300 nonfatal injuries sustained in residential swimming pools occur in this age group.[55]

15-30. Reduce hospital emergency department visits for nonfatal dog bite injuries.

Target: 114 hospital emergency department visits per 100,000 population.

Baseline: 151.4 hospital emergency department visits per 100,000 population were for nonfatal dog bite injuries in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

Total Population, 1997	**Hospital Emergency Department Visits for Nonfatal Dog Bite Injuries** Rate per 100,000
TOTAL	151.4
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	115.1
White	164.2
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU
Gender	
Female	150.8
Male	152.0
Education level	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.

Between 500,000 and 4 million persons in the United States are bitten by dogs every year.[56] Children are among the most vulnerable, and almost half of all people are estimated to have been bitten by a dog during childhood. Among children, more than half of bites have been to the head, face, or neck.

Because of the risk to large parts of the population, especially children, effective prevention strategies are needed to reduce the painful and costly burden of dog bites. More knowledge is needed through a combination of enhanced and coordinated dog bite reporting systems, expanded population-based surveys, and implementation and evaluation of prevention trials. Particularly for the more severe episodes, information needs to be obtained regarding high-risk situations, high-risk dogs, and elements of successful interventions.

15-31. (Developmental) Increase the proportion of public and private schools that require use of appropriate head, face, eye, and mouth protection for students participating in school-sponsored physical activities.

Potential data source: School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP.

Trauma to the head, face, eyes, and mouth occurs frequently during school-sponsored physical activities. Schools with recreation and sports programs can reduce traumas by requiring students to use appropriate protective gear.

Violence and Abuse Prevention

15-32. Reduce homicides.

Target: 3.2 homicides per 100,000 population.

Baseline: 6.2 homicides per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data sources: National Vital Statistics System (NVSS), CDC, NCHS; Uniform Crime Reports, U.S. Department of Justice, Federal Bureau of Investigation.

Total Population, 1997*	Homicides Rate per 100,000
TOTAL	7.2
Race and ethnicity	
American Indian or Alaska Native	10.4
Asian or Pacific Islander	4.1
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	25.2
White	4.3
Hispanic or Latino	9.9
Cuban	11.4
Mexican	10.3
Puerto Rican	9.4

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Total Population, 1997*	Homicides Rate per 100,000
Not Hispanic or Latino	6.8
Black or African American	26.1
White	3.3
Gender	
Female	3.2
Male	11.2
Education level (aged 25 to 64 years)	
Less than high school	18.3
High school graduate	10.5
At least some college	3.1
Select populations	
Children under 1 year	8.3
Children aged 1 to 4 years	2.4
Children aged 10 to 14 years	1.5
Adolescents aged 15 to 19 years	13.6
Persons aged 15 to 34 years	14.5
Intimate partners aged 14 to 45 years (spouse, ex-spouse, boyfriend, girlfriend)	DNC
Black or African Americans aged 15 to 34 years	55.0
Females	14.4
Males	97.6
Hispanic males aged 15 to 34 years	34.9

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Homicide was the cause of death for 19,491 Americans (7.2 per 100,000 population) in 1997.[58] Homicide is the second leading cause of death for young persons aged 15 to 24 years and the leading cause of death for African Americans in this age group.[59] Homicide rates are dropping among all groups, but the decreases are not as dramatic among youth, who already exhibit the highest rates. In 1997, 6,146 young persons aged 15 to 24 years were victims of homicide, amounting to almost 17 youth homicide victims per day in the United States.[60] Of all homicide victims in 1994, 38 percent were under age 24 years.[61] The homicide rate among males aged 15 to 24 years in the United States is 10 times higher than in Canada, 15 times higher than in Australia, and 28 times higher than in France or Germany.[62]

15-33. Reduce maltreatment and maltreatment fatalities of children.

15-33a. Reduce maltreatment of children.

Target: 11.1 per 1,000 children under age 18 years.

Baseline: 13.9 child victims of maltreatment per 1,000 children under age 18 years in 1997.

Target setting method: 20 percent improvement. (Better than the best will be used when data are available.)

Data source: National Child Abuse and Neglect Data System (NCANDS), Administration on Children, Youth and Families, Administration for Children and Families (ACF), Children's Bureau.

Data for population groups currently are not analyzed.

15-33b. Reduce child maltreatment fatalities.

Target: 1.5 per 100,000 of children under age 18 years.

Baseline: 1.7 per 100,000 child maltreatment fatalities in 1997.

Target setting method: 12 percent improvement. (Better than the best will be used when data are available.)

Data source: National Child Abuse and Neglect Data System (NCANDS), Children's Bureau, Administration on Children, Youth, and Families, Administration for Children and Families (ACF).

Data for population groups currently are not analyzed.

The 1997 Child Maltreatment report from the States to the National Child Abuse and Neglect Data System found there were approximately 984,000 victims of maltreatment, a decrease from more than 1 million victims in 1996 in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. The rate of child victims was 13.9 per 1,000 children in the general population in 1997, which is slightly higher than the rate of 13.4 victims per 1,000 children in 1990. There were an estimated 1,196 fatalities due to child maltreatment in the 50 States and the District of Columbia. The findings regarding the types of maltreatment were as follows: 55.9 percent neglect, 24.6 percent physical abuse, 12.5 percent sexual abuse, and 6.1 percent emotional abuse. It is also important to note that 58.8 percent of the substantiated or indicated reports of maltreatment were from professional sources, legal, medical, social service, or education professionals. Based on data from 39 States, 75.4 percent of the perpetrators were the victim's parents, 10.2 percent were relatives, and 1.9 percent were individuals in other caretaking relationships.[63]

Information needs to be collected about new cases and causes of maltreatment. National surveys of new cases are needed to describe the magnitude of the problem. In addition, existing interventions and their impact need to be evaluated. Some long-term studies on home-visitation programs for young mothers have shown potential for preventing child abuse and neglect.

15-34. Reduce the rate of physical assault by current or former intimate partners.

Target: 3.6 physical assaults per 1,000 persons aged 12 years and older.

Baseline: 4.5 physical assaults per 1,000 persons aged 12 years and older by current or former intimate partners in 1994.

Target setting method: 20 percent improvement. (Better than the best will be used when data are available.)

Data source: National Crime Victimization Survey (NCVS), U.S. Department of Justice, Bureau of Justice Statistics.

Persons Aged 12 Years and Older, 1994*	**Physical Assault by Current and/or Former Intimate Partners** Rate per 1,000
TOTAL	4.5
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DSU
Black or African American	DNA
White	DNA
Hispanic or Latino	DNC
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	7.6
Male	1.4

Persons Aged 12 Years and Older, 1994*	Physical Assault by Current and/or Former Intimate Partners Rate per 1,000
Education level	
Less than high school	DNA
High school graduate	DNA
At least some college	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

15-35. Reduce the annual rate of rape or attempted rape.

Target: 0.7 rapes or attempted rapes per 1,000 persons.

Baseline: 0.9 rapes or attempted rapes per 1,000 persons aged 12 years and older in 1998.

Target setting method: Better than the best.

Data sources: National Crime Victimization Survey (NCVS), U.S. Department of Justice, Bureau of Justice Statistics.

Persons Aged 12 Years and Older, 1994*	Rape or Attempted Rape Rate per 1,000
TOTAL	1.5
Race and ethnicity	
Other (Asian/Pacific Islander and American Indian/Alaska Native)	1.9
Native Hawaiian and other Pacific Islander	DNC
Black or African American	2.4
White	1.3
Hispanic or Latino	1.6
Not Hispanic or Latino	1.5
Black or African American	DSU
White	DSU
Gender	
Female	2.7
Male	DSU

Persons Aged 12 Years and Older, 1994*	**Rape or Attempted Rape** Rate per 1,000
Education level	
Less than high school	DNA
High school graduate	DNA
At least some college	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*New data for population groups will be added when available.

15-36. Reduce sexual assault other than rape.

Target: 0.2 sexual assaults other than rape per 1,000 persons aged 12 years and older.

Baseline: 0.6 sexual assaults other than rape per 1,000 persons aged 12 years and older in 1998.

Target setting method: Better than the best.

Data sources: Criminal Victimization in the United States, 1994; National Crime Victimization Survey (NCVS), U.S. Department of Justice, Bureau of Justice Statistics.

Persons Aged 12 Years and Older, 1994*	**Sexual Assault Other Than Rape** Rate per 1,000
TOTAL	0.5
Race and ethnicity	
Other (Asian/Pacific Islander and American Indian/Alaska Native)	0.6
Native Hawaiian and other Pacific Islander	DSU
Black or African American	0.3
White	0.6
Hispanic or Latino	0.9
Not Hispanic or Latino	0.5
Black or African American	DSU
White	DSU

Persons Aged 12 Years and Older, 1994*	Sexual Assault Other Than Rape
	Rate per 1,000
Gender	
Female	1.0
Male	0.1
Education level	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*New data for population groups will be added when available.

Both females and males experience family and intimate violence and sexual assault. Perpetrators can be the same or opposite sex. Male victimization of females is more common in intimate partner violence and sexual assault.

In 1995, almost 5,000 females in the United States were murdered. In those cases for which the Federal Bureau of Investigation has data on the relationship between the offender and the victim, 85 percent were killed by someone they knew. Nearly half of the females who knew the perpetrators were murdered by a husband, ex-husband, or boyfriend.[64] In 1994, more than 500,000 females were seen in hospital EDs for violence-related injuries, and 37 percent of those females were there for injuries inflicted by spouses, ex-spouses, or nonmarital partners.[65] Although most assault victims survive, they suffer physically and emotionally.

In 1985, a minimum of 16 percent of couples in the United States experienced an assault, and about 40 percent of these assaults involved severe violence, such as kicking, biting, punching, choking, and attacking with weapons.[66] In these families, nearly one out of eight of the husbands had carried out one or more acts of physical aggression against his wife during the preceding 12 months.[67]

Estimates of abuse rates during pregnancy also are a concern. A 1996 literature review indicted that estimated proportions of women experiencing intimate partner violence (IPV) during pregnancy ranged between 0.9 percent and 20.1 percent. The proportion of pregnant women who had experienced IPV at any time in the past ranged between 9.7 percent and 29.7 percent.[68]

Males who are physically violent toward their partners are more likely to be sexually violent toward them and are more likely to use violence toward children.[69] The perpetration of intimate partner violence is most common in adults who, as children or adolescents, witnessed intimate partner violence or became the targets of violence from their caregivers.[69]

Survey data from 1994 indicate that 407,190 females aged 12 years and older were victims of rape, attempted rape, or sexual assault.[70] Other surveys indicate that the problem is underestimated.[71] For example, the National Women's Study, in conjunction with estimates based on the U.S. Census, suggests that 12.1 million females in the United States have been victims of forcible rape sometime in their lives. According to this study, 0.7 percent or approximately 683,000 of adult females experienced a forcible rape in the last year.[72]

Teen dating violence is a concern that may stem from childhood abuse or other experiences with violence. Battering in teen relationships is very different from intimate partner violence that occurs between adults. The issue of teen dating violence requires national attention and prevention efforts that need to continue focusing on adolescent violence within the larger context of family violence.

The nature of intimate partner violence and sexual violence makes such problems difficult to study. Consequently, much remains unknown about the factors that increase or decrease the likelihood that males will behave violently toward females, the factors that endanger or protect females from violence, and the physical and emotional consequences of such violence for females and their children.

15-37. Reduce physical assaults.

Target: 25.5 physical assaults per 1,000 persons aged 12 years older.

Baseline: 31.1 physical assaults per 1,000 persons aged 12 years and older in 1998.

Target setting method: Better than the best.

Data source: National Crime Victimization Survey (NCVS), U.S. Department of Justice, Bureau of Justice Statistics (rates per 1,000).

Persons Aged 12 Years and Older, 1998	Physical Assaults Rate per 1,000
TOTAL	31.1
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	33.7
White	31.1
Hispanic or Latino	25.6

Persons Aged 12 Years and Older, 1998	Physical Assaults Rate per 1,000
Not Hispanic or Latino	31.5
Black or African American	DNA
White	DNA
Gender	
Female	24.3
Male	38.3
Select populations	
Adolescents aged 12 to 15 years	71.2
Adolescents aged 16 to 19 years	74.7
Young adults aged 20 to 24 years	54.8

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

15-38. Reduce physical fighting among adolescents.

Target: 33.3 percent.

Baseline: 36.6 percent of adolescents in grades 9 through 12 engaged in physical fighting in the previous 12 months in 1997.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Adolescents in Grades 9 Through 12, 1997	Fighting in Past 12 Months Percent
TOTAL	36.6
Race and ethnicity	
American Indian or Alaska Native	DNC
Asian or Pacific Islander	DNC
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNC
White	DNC
Hispanic or Latino	40.7
Not Hispanic or Latino	DNC
Black or African American	43.0
White	33.7

Adolescents in Grades 9 Through 12, 1997	Fighting in Past 12 Months Percent
Gender	
Female	26.0
Male	45.5
Select populations	
9th grade	44.8
10th grade	40.2
11th grade	34.2
12th grade	28.8

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

15-39. Reduce weapon carrying by adolescents on school property.

Target: 6 percent.

Baseline: 8.5 percent of students in grades 9 through 12 carried weapons on school property during the past 30 days in 1997.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Students in Grades 9 Through 12, 1997	Weapon Carrying on School Property in Past 30 Days Percent
TOTAL	8.5
Race and ethnicity	
American Indian or Alaska Native	DNC
Asian or Pacific Islander	DNC
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNC
White	DNC
Hispanic or Latino	10.4
Not Hispanic or Latino	DNC
Black or African American	9.2
White	7.8

Students in Grades 9 Through 12, 1997	Weapon Carrying on School Property in Past 30 Days Percent
Gender	
Female	3.7
Male	12.5
Family income level	
Poor	DNC
Near poor	DNC
Middle/high	DNC
Select populations	
9th grade	10.2
10th grade	7.7
11th grade	9.4
12th grade	7.0

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

In 1998, physical assault victimization among adolescents took place twice as often as in the general population of persons age 12 years or older. Assaults were significantly higher among males. While the total assaults for blacks and whites and Hispanics and non-Hispanics were similar, aggravated assault was higher for blacks than whites (11.9 versus 7.0 per 1,000), and simple assault was higher for non-Hispanics than Hispanics (23.9 versus 19.5 per 1,000). Assaults were higher for those with lower household incomes; rates of assault victimization decreased from 54.2 per 1,000 persons in households with annual incomes of less than $7,500 to less than 30 per 1,000 persons in households with annual incomes greater than $35,000.[72a]

In 1997, 36.6 percent of students in grades 9 through 12 had been in a physical fight one or more times during the 12 months preceding the survey.[73] Overall, male students were significantly more likely than female students to have been in a physical fight. This difference was identified for all racial and ethnic and grade subgroups. Overall, African American and Hispanic students were more likely than white students to have been in a physical fight. Male and female students in grade 9 were more likely than male students in grades 11 and 12 and female students in grade 12 to have been in a physical fight. Male and female students in grade 10 were more likely than male and female students in grade 12 to report this behavior.

Weapon carrying on school property during the 30 days before the survey was 8.5 percent nationwide. Overall, male students were more likely than female students to have carried a weapon on school property. This difference was identified for white and Hispanic students and all grade subgroups. African American female students were more likely than Hispanic and white female students to have carried a weapon on school property.[74]

Violence prevention programs for youth need to focus on strategies that reduce involvement in physical fighting and discourage weapon carrying on school property. Strategies to reduce weapon carrying on school property, physical fighting, and resulting injuries among youth should begin early in life and must be tailored to youth of widely varying social, economic, cultural, and ethnic backgrounds.[75] As with other areas of violence and abuse, carefully controlled studies to evaluate the effectiveness of various strategies and interventions are needed. Physicians and other health professionals are in a position to provide effective primary prevention messages to youth and their families. Also, ED workers treating adolescents with fight-related injuries can practice secondary interventions, as they do with victims of child abuse, sexual assault, or attempted suicide.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-3. Counseling about health behaviors
1-11. Rapid prehospital emergency care
1-12. Single toll-free number for poison control centers

7. Educational and Community-Based Programs

7-3. Health-risk behavior information for college and university students

8. Environmental Health

8-13. Pesticide exposures
8-24. Exposure to pesticides
8-25. Exposure to heavy metals and other toxic chemicals

18. Mental Health and Mental Disorders

18-1. Suicide
18-2. Adolescent suicide attempts

20. Occupational Safety and Health

20-1. Work-related injury deaths
20-2. Work-related injuries
20-5. Work-related homicides
20-6. Work-related assaults

26. Subtance Abuse

26-1. Motor vehicle crash deaths and injuries
26-5. Alcohol-related emergency department visits
26-6. Youth riding with a driver who has been drinking
26-7. Alcohol- and drug-related violence

26-24. Administrative license revocation laws

26-25. Blood alcohol concentration (BAC) levels for motor vehicle drivers

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K .)

Age-adjusted injury rate: An injury rate calculated to reflect a standard age distribution.

Attempted rape: Includes males and females, heterosexual and homosexual rape, and verbal threats of rape.

Graduated licensing laws: Require young drivers to progress through phases of restricted driving before they are allowed to get their unrestricted licenses. Such restrictions include a mandatory supervised driving period, night driving curfews, limits on teen passengers riding with a beginning driver, and a lower blood alcohol concentration (BAC) level for teens than for adults.

Homicide: Fatal injury intentionally caused to one human being by another.

Impaired driving: Driving while under the influence of alcohol or drugs.

Injury: Unintentional or intentional damage to the body resulting from acute exposure to thermal, mechanical, electrical, or chemical energy or from the absence of such essentials as heat or oxygen.

Intimate partner(s): Refers to spouses, ex-spouses, boyfriends, girlfriends, and former boyfriends and girlfriends (includes same-sex partners). Intimate partners may or may not be cohabitating and need not be engaging in sexual activities.

Intimate partner violence: Actual or threatened physical or sexual violence or psychological and emotional abuse by an intimate partner.

Motorcyclist: Includes both operator and rider (passenger).

NCUTLO: National Committee on Uniform Traffic Laws and Ordinances.

Pedalcyclists: Riders of bicycles and tricycles.

Premature death: Dying before life expectancy is reached.

Primary enforcement: A stipulation of a safety belt use law that allows law enforcement officials to stop a driver solely on the basis of a safety belt law violation.

Rape: Forced sexual intercourse, including both psychological coercion and physical force. Forced sexual intercourse means vaginal, anal, or oral penetration by the offender(s) and includes incidents of penetration by a foreign object.

Risk factor: A characteristic that has been demonstrated statistically to be associated with a particular injury.

Secondary enforcement: A stipulation of a safety belt use law that allows law enforcement officials to address a safety belt use law violation only after a driver has been stopped for some other purpose.

Sexual assault: A wide range of victimizations separate from rape and attempted rape. Included are attacks or attempted attacks of unwanted sexual contact between the victim and the offender that may or may not involve force; includes grabbing or fondling. Verbal threats also are included.

Suffocation: Includes inhalation and ingestion of food or other objects; accidental mechanical suffocation; suicide and self-inflicted injury by hanging, strangulation, and suffocation; assault by hanging and strangulation; and hanging, strangulation, or suffocation undetermined whether accidental or purposely inflicted.

Target population: The group of persons (usually those at high risk) whom program interventions are designed to reach.

Trauma registry: A collection of data on patients who receive hospital care for certain types of injuries, such as blunt or penetrating trauma or burns. Such collections are designed primarily to ensure quality care in individual institutions and trauma systems but also provide useful data for the surveillance of injury and death.

Unintentional injury: A type of injury that occurs without purposeful intent.

Vehicle miles traveled (VMT): The miles of travel by all types of motor vehicles as determined by the States on the basis of actual traffic counts and established estimating procedures.

Violence: An act carried out with the intention or perceived intention of causing physical pain or injury to another person.

Vulnerable populations: Refers to children, elderly persons, and persons with disabilities.

Years of potential life lost (YPLL): A statistical measure used to determine premature death. YPLL is calculated by subtracting an individual's age at death from a predetermined life expectancy. The Centers for Disease Control and Prevention generally uses 75 years of age for this purpose (for example, a person who died at aged 35 years would have a YPLL of 40).

References

1. Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS). Deaths: Final Data for 1997. *National Vital Statistics Reports* 47(19). June 1999.

2. Houk, V.; and Brown, S.T.; and Rosenberg, M.; One fine solution to the injury problem. *Public Health Reports* 102:5. 1987

3. Baker, S.P.; O'Neill, B.; Ginsburg, M.J.; and Li, G. *The Injury Fact Book*, 2nd ed. New York: Oxford University Press, 1992.

4. CDC. *Health United States, 1999*. Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

5. U.S. Department of Health and Human Services (HHS), National Institutes of Health, National Institute on Alcohol and Alcoholism. *Ninth Special Report to the U.S. Congress on Alcohol and Health from the Secretary of Health and Human Services*. NIH Pub. No. 97-4017. Washington, DC: the Department, 1997.

6. HHS, CDC, National Center for Injury Prevention and Control. Ten Leading Causes of Injury Deaths.

7. Schappert, S.M. Ambulatory care visits to physician offices, hospital outpatient departments and emergency departments: U.S., 1995. NCHS. *Vital and Health Statistics* 13(29):1-38, 1997.

8. National Safety Council. *Accident Facts*. 1995.

9. National Safe Kids Campaign. *Childhood Injury Factsheet*. Itasca, NY: the Council, 1997.

10. Moscicki, E.K.; O'Carroll, P.W.; Rae, D.S.; Roy, A.E.; Locke, B.Z.; and Regier, D.A. Suicideal Ideation and Attempts: The Epidemiologic Catchement Area Study. *Report of the Secretary's Task Force in Youth Suicide*, Volume 4. Washington, DC: U.S. Department of Health and Human Services, January 1989.

11. Indian Health Service (HIS). Injury Prevention Program. *Injuries Among Native Americans and Alaska Natives*. Rockville, MD: IHS, 1997.

12. United States Fire Administration. *Curious Kids Set Fires*. Washington, DC: Federal Emergency Management Agency, 1990.

13. CDC, NCHS. Deaths: Final Data for 1997. *National Vital Statistics Report* 47(10):1-104, 1999.

13. National Safety Council. *Accident Facts*. Itasca, IL: the Council, 1993.

14. Livingson, I.L., ed. *Handbook of Black American Health: The Mosaic of Conditions, Issues, Policies, and Prospects*. Westport, CT: Greenwood Press, 1994.

15. Anderson, R.N.; Kockanck, K.D.; Murphey, S.L. Report of final mortality statistics, 1995. *Monthly Vital Statistics Report* 45(suppl. 2):11, 1997.

16. CDC. *Morbidity and Mortality Monthly Report* 47(10):193, 1998.

17. HHS, CDC. Ten Leading causes of death, 1995. Atlanta, GA: the Department, 1997.

18. McLoughlin, E.; Annest, J.L.; Fingerhut, L.A.; et al. Recommended framework for presenting injury mortality data. *Morbidity and Mortality Weekly Report* 46(RR-14), 1997.

19. Cummings, P.; Grossman, D.C.; Rivara, F.P.; and Koepsell, T.D. State gun safe storage laws and child mortality due to firearms. *Journal of the American Medical Association* 278(13), 1997.

20. Chaloupka, F.J.; Saffer, H.; and Grossman, M. Alcohol control policies and motor-vehicle fatalities. *Journal of Legal Studies* 22:161-186, 1993.

21 Cook, P.J., and Moore, M.J. Economic perspectives on reducing alcohol-related violence. In: Martin, S.E. *Alcohol and Interpersonal Violence: Fostering Multidisplinary Perspectives*. Based on a workshop on alcohol-related violence sponsored by the National Institute on Alcohol Abuse and Alcoholism, May 14-15, 1992. NIH Pub. No. 93-3496. Rockville, MD: National Institutes of Health, 1993.

22. National Center for Injury Prevention and Control. *Best Practices for Preventing Violence by Children and Adolescents: A source book*. Atlanta, GA: Centers for

Disease Control and revention, 1999 (in press).

23. Rice, D.P.; Mackenzie, E.J.; and Associates. *Cost of Injury in the United States: A Report to Congress*. San Francisco, CA: Institute of Health and Aging, University of California and Injury Prevention Center, The Johns Hopkins University, 1989, p. 143, 163.

24. NCHS. National Vital Statistics System, unpublished data, 1999.

25. Kraus, K.F.; Black, M.A.; Hessol, N.; et al. The incidence of acute brain injury and serious impairment in a defined population. *American Journal of Epidemiology* 119:186-201, 1984.

26. Annest, J.L.; Mercy, J.A.; Gibson, D.R.; and Ryan, G.W. National estimates of nonfatal firearm-related injuries. *Journal of the American Medical Association* 273(22):1749-1754, 1995.

27. CDC. Rates of Homicide, Suicide, and Firearm-related Death Among Children - 26 Industrialized countries, 1950-1993. *Morbidity and Mortality Weekly Report* 46(5):101, 1995.

28. Fingerhut, L.A.; Ingram, D.D; and Feldman, J.J. firearm and nonfirearm homicide among persons 15 to 19 years of age: differences by level of urbanization. United States 1979-89. *Journal of the American Medical Association* 267(22):3048-53, 1992.

29. Max, W., and Rice, D.P. Shooting in the dark: Estimating the cost of firearm injuries. *Health Affairs* 12(4):171-185, 1993.

30. NCHS. *Vital statistics mortality data, underlying cause of death, 1962-97.* [Machine-readable public-use tapes.] Hyattsville, MD: U.S. Department of Health and Human Services; 1999.

31. Litovitz, T.L.; Smilkstein, M.S.; Felberg, L.; et al. 1996 annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. *American Journal of Emergency Medicine* 15(5):447-500, 1997.

32. National Safe Kids Campaign. *Poisoning Fact Sheet*. September 1997.

33. HHS, NCHS, National Vital Statistics System, 1997, Washington, DC.

34. National Safe Kids Campaign, December 1998

35. National Highway Traffic Safety Administration (NHTSA), Fatality Analysis Reporting System (FARS), 1998. HHS, NCHS, National Vital Statistics Systems, 1998: Washington, DC.

36. NHTSA. *Traffic Safety Facts 1998: Pedestrians*. Washington, DC: the Administration, 1998.

37. NHTSA. *Traffic Safety Facts 1998*. Washington, DC; the Administration, 1998.

37. NHTSA. *Traffic Safety Facts 1998: Older Population*. Washington, DC: the Administration, 1998.

38. Advocates for Highway and Auto Safety. *Safety Belt Fact Sheet*. 1998.

39. NHTSA. *Traffic Safety Facts 1997: Children*. Washington, DC, the Administration, 1997.

40. NHTSA. *Traffic Safety Facts 1998: Motorcycles*. Washington, DC; the Administration, 1998.

41. NHTSA. *Traffic Safety Facts 1998: Young Drivers*. Washington, DC; the Administration, 1998.

42. NHTSA. *Traffic Safety Facts 1998: Pedalcyclists*. Washington, DC; the Administration, 1998.

43. Insurance Institute for Highway Safety. *Facts 1996 Fatalities: Bicycles*. Arlington, VA: the Institute, 1997.

44. CDC. Injury-Control Recommendations: Bicycle Helmets *Morbidity and Mortality Weekly Report* 44(RR-1), 1995.

45. National Safe Kids Campaign. *State Bike Helmet Legislation*. Winter 1998.

46. Karter, M.J. *Fire Loss in the United States, 1998*. Quincy, MA: National Fire Protection Association, 1999.

47. Hall, J.R. *The U.S. Fire Problem and Overview Report. Leading causes and other patterns and trends*. Quincy, MA: NFPA.

48. CDC, NCHS. *Mortality Data Tapes*. Hyattsville, MD: the Center, 1998.

48a. Hingson, R., and Howland, J. Alcohol and Non-Traffic Unintentional Injuries. *Addiction* 88(7):877-883, 1993.

49. Cummings, S.R.; Rubin, S.M.; and Black, D. The future of hip fractures in the United States. Numbers, costs, and potential effects of postmenopausal estrogen. *Clinical Orthopedics* 252:163:166, 1990.

50. Englander, F.; Hodson, T.J.; and Teregrossa, R.A. Economic dimensions of slip and fall injuries. *Journal of Forensic Science* 41(5):746-773, 1996.

51. Tinetti, M.E., and Speechley, M. Prevention of Falls Among the Elderly. *New England Journal of Medicine* 320(16)1055-1059, 1989.

52. NCHS. *National Mortality Data*. Hyattsville, MD: the Center, 1997.

53. U.S. Department of Transportation. *Boating Statistics 1992*. Pub. No. COMDTPUB P16754.8.

Washington, DC: the Department, 1993.

54. NCHS. *Mortality Data Tapes*. Hyattsville, MD: the Center, 1996.

55. American Academy of Pediatrics. *Injury Prevention and Control for Children and Youth*, 3rd ed., 1997.

56. Sacks, J.J.; Lockwood, R.; Hornreich, J.; and Sattin, R.W. Fatal Dog Attacks, 1989-94. *Pediatrics* 97:891-895, 1996.

57. Not in text.

58. NCHS. Mortality data tapes for number of deaths. U.S. Bureau of Census population estimates: Intercensal data are used for 1984-89. Decennial census data are used for 1990. Demo-Detail postcensal population estimates are used for 1991-93.

59. Singh, G.K.; Kochanek, K.D.; and MacDorman, M.F. Advance report of final mortality statistics, 1994. *Monthly Vital Statistics Report* 45(3S). Hyattsville, MD: National Center for Health Statistics, 1996.

60. NCHS. *Mortality Data Tapes*. Hyattsville, MD: the Center, 1994.

61. CDC. *National Summary of Injury Mortality Data, 1987-1994*. Atlanta, GA: National Center for Injury Prevention and Control, 1996.

62. World Health Organization. *World Health Statistics Annual, 1994*. Geneva, Switzerland: WHO, 1995.

63. HHS, Administration on Children, Youth, and Families. *Child Maltreatment 1997: Reports from the States to the National Child Abuse and Neglect Data System*. Washington, DC: U.S. Government Printing Office, 1999.

64. Federal Bureau of Investigation. *Crime in the United States: 1996*. Washington, DC: U.S. Government Printing Office, 1997.

65. Bureau of Justice Statistics. *Violence-Related Injuries Treated in Hospital Emergency Departments*. Washington, DC: U.S. Department of Justice, August 1997.

66. Straus, M.A., and Smith, C. Family patterns and primary prevention of family violence. *Trends in Health Care, Law & Ethics* 8(2):1-25, 1993.

67. How violent are American families? Estimates from the National Family Violence Survey and other studies. In: Straus, M.A., and Gelles, R.J. (eds.). *Physical Violence in American Families: Risk Factors and Adaptations to Violence in 8,145 Families*. New Brunswick, NJ: Transaction Publishers, 1990, 95-112.

68. Gazmararian, J.A.; Lazorick, S.; Spitz, A.M.; Ballard, T.J.; Saltzman, L.E.; and Marks, J.S. Prevalence of violence against pregnant women. *Journal of the American Medical Association* 275:1915-1920, 1996.

69. Hotaling, G.T., and Sugarman, D.B. An analysis of risk markers in husband to wife violence: The current state of knowledge. *Violence and Victims* 1:101-124, 1986.

70. U.S. Department of Justice, Bureau of Justice Statistics. *Crime Victimization in the United States, 1994*. Washington, DC: the Bureau, 1997.

71. Bachman, R., and Taylor, B. The measurement of family violence and rape by the redesigned national crime victimization survey. *Justice Quarterly* 11:701-714, 1994.

72. Kilpatrick, D.G.; Edmunds, C.N.; and Seymour, A.K. *Rape in America: A Report to the Nation, 1992*: pg 2.

72a. DOJ. *Statistics. Criminal Victimization 1998: Changes 1997-98 With Trends, 1993-98*. Pub. No. NCJ-176353. Washington, DC: the Department, July 1999.

73. CDC. Youth Risk Behavior Surveillance - United States. *Morbidity and Mortality Weekly Report* 1(SS03):1, August 14, 1998.

74. CDC. CDC Surveillance Summaries, August 14, 1998. *Morbidity and Mortality Weekly Report* 47(No. SS-3):7-8, 44, 1998.

75. National Center for Injury Prevention and Control. *Best practices for preventing violence by children and adolescents: a source book*. Atlanta, GA: the Center, November 1999 (in press).

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

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HEALTHY PEOPLE 2010

Volume II

Includes

- Objectives for Improving Health (Part B: Focus Areas 16–28)
- Tracking Healthy People 2010

Partnerships for Health in the New Millennium
January 24-28, 2000

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Healthy People 2010

Conference Edition-Volume II

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- Tracking Healthy People 2010

U. S. Department of Health and Human Services
January 2000

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Objectives for Improving Health (Part B)

16

Maternal, Infant, and Child Health

Co-Lead Agencies: Centers for Disease Control and Prevention;
Health Resources and Services Administration

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Goal

Improve the health and well-being of women, infants, children, and families.

Overview

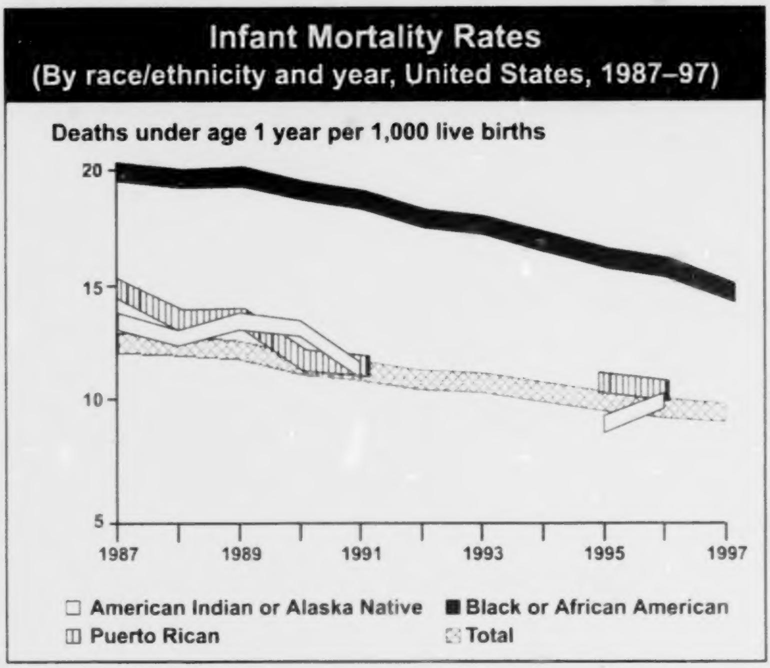
The health of mothers, infants, and children is of critical importance, both as a reflection of the current health status of a large segment of the U.S. population and as a predictor of the health of the next generation. This focus area addresses a range of indicators of maternal, infant, and child health—those primarily affecting pregnant and postpartum women (including indicators of maternal illness and death and preconceptional health) and those that affect infants' health and survival (including infant death; birth outcomes; prevention of birth defects; access to preventive care; and fetal, perinatal, and infant deaths).

Infant death is an important measure of a nation's health and a worldwide indicator of health status and social well-being. As of 1995, the U.S. infant mortality rates ranked 25th among industrialized nations.[1] In the past decade, critical measures of increased risk of infant death, such as new cases of low birth weight (LBW) and very low birth weight (VLBW), have actually increased in the United States. In addition, the disparity in infant mortality rates between whites and specific racial and ethnic groups (especially African Americans, American Indians or Alaska Natives, Native Hawaiians, and Puerto Ricans) persists. Although the overall infant mortality rate has reached record low levels, the rate for African Americans remains twice that of whites.[2]

Issues and Trends

In 1997, 28,045 infants died before their first birthday, for an overall rate of 7.2 deaths per 1,000 live births. This rate has declined steadily over the past 20 years; in 1975, the infant mortality rate was over 15 per 1,000 live births.[2] In 1996, nearly two-thirds of all infant deaths took place during the first 28 days of life (the neonatal period). The overall neonatal mortality rate in 1997 was 4.8 per 1,000 live births.[2] The remaining one-third of infant deaths took place during the postneonatal period from an infant's 29th day of life until the first birthday. The U.S. postneonatal mortality rate in 1997 was 2.4 deaths per 1,000 live births.[2]

Four causes account for more than half of all infant deaths: birth defects, disorders relating to short gestation and unspecified LBW, sudden infant death syndrome (SIDS), and respiratory distress syndrome. The leading causes of neonatal death in 1997 were birth defects, disorders related to short gestation and LBW, respiratory distress syndrome, and maternal complications of pregnancy. After the first month of life, SIDS is the leading cause of infant death, accounting for about one-third of all deaths during this period. Maternal age also is a risk factor for infant death.



Infant Mortality Rates
(By race/ethnicity and year, United States, 1987–97)

Source: National Vital Statistics System (NVSS), CDC, NCHS. Data for 1997 are preliminary; 1992-94 data for American Indian or Alaska Native and Puerto Rican are not available; 1987-91 data for Puerto Rican are for selected States.

Mortality rates are highest among infants born to young teenagers (16 years and under) and to mothers aged 44 years and older.

The death of fetuses before birth is another important indicator of perinatal health. In 1996, nearly 7 fetal deaths were reported for every 1,000 live births and fetal deaths combined, representing a slight decline from the fetal mortality rate of 7.6 per 1,000 in 1987.[2] Fetal death sometimes is associated with pregnancies complicated by such risk factors as problems with amniotic fluid levels and maternal blood disorders.[3] Early, comprehensive, and risk-appropriate care to manage such conditions has contributed to reductions in fetal mortality rates.

Short gestation and LBW are among the leading causes of neonatal death, accounting for 20 percent of neonatal deaths. In 1997, a total of 11.4 percent of births were preterm, and 7.5 percent were of LBW.[4] Included in these statistics were infants born at VLBW, or less than 1,500 grams (3.3 pounds). The rate of VLBW births was 1.4 percent in 1997. The VLBW rate has increased slightly since 1990 among whites and other population groups including African Americans, Puerto Ricans, and American Indians.

LBW is associated with long-term disabilities, such as cerebral palsy, autism, mental retardation, vision and hearing impairments, and other developmental disabilities. (See Focus Area 6. Disability and Secondary Conditions and Focus Area 28. Vision and Hearing.) Despite the low proportion of pregnancies resulting in LBW babies, expenditures for the care of LBW infants total more than half of the costs incurred for all newborns. In 1988, the cost of a normal, healthy delivery averaged $1,900, whereas hospital costs for LBW infants averaged $6,200.[5]

The general category of LBW infants includes both those born too early (preterm infants) and those who are born at full term but who are too small, a condition known as intrauterine growth retardation (IUGR). Maternal characteristics that are risk factors associated with IUGR include maternal LBW, prior LBW birth history, low prepregnancy weight, cigarette smoking, multiple births, and low pregnancy weight gain. Cigarette smoking is the greatest known risk factor.[6]

VLBW usually is associated with preterm birth. Relatively little is known about risk factors for preterm birth, but the primary risk factors are prior preterm birth and spontaneous abortion, low prepregnancy weight, and cigarette smoking.[5] These risk factors account for only one-third of all preterm births. Maternal use of illicit drugs also may increase the risk of VLBW.

The use of alcohol, tobacco, and illegal substances during pregnancy is a major risk factor for LBW and other poor infant outcomes. Alcohol use is linked to fetal death, LBW, growth abnormalities, mental retardation, and fetal alcohol syndrome (FAS).[7] Overall rates of alcohol use during pregnancy have increased during the 1990s, and the proportion of pregnant women using alcohol at higher and more hazardous levels has increased substantially. Smoking during pregnancy is linked to LBW, preterm delivery, SIDS, and respiratory problems in newborns. In addition to the human cost of these conditions, the economic cost of services to substance-exposed infants is great: Health expenditures related to FAS are estimated to be from $75 million to $9.7 billion each year.[7] Over $500 million a year is spent on medical expenses for infants exposed to cocaine in utero.[8] Smoking-attributable costs of complicated births in 1995 were estimated at $1.4 billion (11 percent of costs for all complicated births, based on smoking prevalence during pregnancy of 19 percent) and $2.0 billion (15 percent for all complicated births, based on smoking prevalence during pregnancy of 27 percent).[9]

Finally, breastfeeding is an important contributor to overall infant health, as human breast milk presents the most complete form of nutrition for infants.[10] (The American Academy of Pediatrics recommends that women who test positive for HIV not breastfeed to help prevent transmission of the virus to their infants.)[11] Breastfeeding rates have increased over the years, particularly in early infancy. However, breastfeeding rates among women of all races decrease substantially by 5 to 6 months postpartum. The 1997 rates at 5 to 6 months were only 29 percent among white women, 14.5 percent among African American women, and 24.5 percent among Hispanic women.[12]

Also important to child health are the prevention and treatment of disabilities in children. Twelve percent of all children aged 18 years and under have a disability (defined as a limitation in one or more functional areas). In 1994, 10.6 percent of all children aged 5 to 17 years had limitations in learning ability, 6 percent had limitations in communication, 1.3 percent had limitations in mobility, and 0.9 percent had limitations in personal care.[13] The burden of childhood disability is compounded because affected children live with their disabling conditions many more years than do persons acquiring disability later in life. In 1992, asthma and mental retardation were the most common disabling conditions, accounting for 40 percent of all activity limitations.[14] Other major disabling conditions in childhood include speech impairment, hearing impairment, cerebral palsy, epilepsy, and leg impairment. (See Focus Area 6. Disability and Secondary Conditions and Focus Area 28. Vision and Hearing.)

The objectives in this focus area cover the broad array of childhood conditions and genetic disorders. An example of preventable birth defects is spina bifida and other neural tube defects (NTDs). The occurrence of these disorders could be reduced by more than half if women consumed adequate folic acid before and during pregnancy.

All States require newborns to be screened for genetic conditions, such as phenylketonuria (PKU) and hypothyroidism; the majority of States also require screening for sickle cell disease. Although not necessarily preventable, these conditions are susceptible to intervention after delivery. For example, nutritional interventions in infancy can prevent mental retardation in children with PKU, penicillin can prevent infection in children with sickle cell disease, and hormone replacement can prevent mental retardation in children with hypothyroidism. Thus, adequate screening of newborns is the first step toward prevention of illness, disability, and death.

In addition to infant deaths and health conditions, the effect of pregnancy and childbirth on women is an important indicator of women's health. In 1997, a total of 327 maternal deaths were reported by vital statistics.[15] While this number is small, maternal death remains significant because a high proportion of these deaths are preventable and because of the impact of women's premature death on families. The maternal mortality ratio among African American women consistently has been three to four times that of white women. Ectopic pregnancy is an important cause of pregnancy-related illness and disability in the United States and the leading cause of maternal death in the first trimester. The risk of ectopic pregnancy increases with age; women of all races aged 35 to 44 years are at more than three times the risk of ectopic pregnancy than are women aged 15 to 24 years.[16] Preeclampsia and eclampsia make up the second leading cause of pregnancy-related death. Other causes of maternal death are hemorrhage, embolism, infection, and anesthesia-related complications.

The rates of many of these indicators have shown improvement over the past decade. The rate of infant mortality declined more than 27 percent between 1987 and 1996. The rate of fetal mortality declined 8 percent between 1987 and 1995. Other indicators show less progress. The LBW rate increased 8.7 percent between 1987 and 1997. The rate of FAS has risen steeply, especially among African Americans. In addition, the maternal mortality rate has not declined since 1982, nor has the disparity between African American and white women.

Despite these unfavorable trends, evidence is encouraging about increases in women's use of health practices that can help their own health and that of their infants. The percentage of pregnant women who start prenatal care early increased 8.5 percent between 1987 and 1996. The percentage of mothers who breastfeed their newborns also went up 15.5 percent between 1988 and 1997, with greater gains among African American and Hispanic women. Other maternal health practices have shown less improvement: in 1992-94, the proportion of women of childbearing age reporting consumption of the recommended level of folic acid (400 micrograms) was 21 percent.

Disparities

Many of these conditions and risk factors disproportionately affect certain racial and ethnic groups. The disparities between white and nonwhite groups in infant death, maternal death, and LBW are wide and, in many cases, are growing. Specifically:

- The 1996 infant mortality rate among African American infants was 2.4 times that of white infants. Although infant mortality rates have declined within both racial groups, the proportional discrepancy between African Americans and whites remains largely unchanged.[2]

- The rate of maternal mortality among African Americans is 20.3 per 100,000 live births, nearly four times the white rate of 5.1 per 100,000, although the rate among African Americans has been declining over the years. African American women continue to be three to four times more likely than white women to die of pregnancy and its complications. The maternal death differential between African Americans and whites is highest for pregnancies that did not end in live birth (ectopic pregnancy, spontaneous and induced abortions, and gestational trophoblastic disease).[17]

- Rates of LBW for white women have risen from 5.7 percent of births in 1990 to 6.5 percent in 1997. Among African Americans, the LBW rate has declined slightly in the 1990s but remains twice as high as that of whites—13 percent in 1997. African Americans also are more likely to have other risk factors, such as young maternal age, high birth order (that is, having many live births), less education, and inadequate prenatal care. Puerto Ricans also are especially likely to have LBW infants.[4]

- American Indians or Alaska Natives and African Americans account for a disproportionate share of FAS deaths. In 1990, the rates of FAS among

American Indians or Alaska Natives and African Americans were 5.2 and 1.4 per 1,000 live births, respectively, compared with 0.4 per 1,000 among the population as a whole.[18]

African American and Hispanic women also are less likely than whites to enter prenatal care early. For both African American and white women, the proportion entering prenatal care in the first trimester rises with maternal age until the late thirties, then begins to decline. For example, in 1997, 56.6 percent of African American women aged 18 years and under began care early, compared with 66.2 percent of white women of the same age. Among women aged 25 to 39 years, 77.6 percent of African American women entered care early, compared with 87.7 percent of white women.[4]

Women in certain racial and ethnic groups also are less likely than white women to breastfeed their infants. In the early postpartum period, 41.3 percent of African American mothers and 63.6 percent of Hispanic mothers breastfed in 1997, compared with 66.5 percent of white women. These differences persist at 5 to 6 months postpartum, when 14.5 percent of African American women, 24.5 percent of Hispanic women, and 28.6 percent of white women breastfed.[12]

Opportunities

Many of the risk factors mentioned can be mitigated or prevented with good preconception and prenatal care. First, preconception screening and counseling offer an opportunity to identify and mitigate maternal risk factors before pregnancy begins. Examples include daily folic acid consumption (a protective factor) and alcohol use (a risk factor). During preconceptional counseling, healthcare providers also can refer women for medical and psychosocial or support services for any risk factors identified. Counseling needs to be culturally competent and linguistically appropriate. Prenatal visits offer an opportunity to provide information about the adverse effects of substance use, including alcohol and tobacco during pregnancy, and provide a vehicle for referrals to treatment services. The use of timely, high-quality prenatal care can help to prevent poor birth outcomes and improve maternal health by identifying women who are at particularly high risk and taking steps to mitigate risks, such as the risk of high blood pressure or other maternal complications. Interventions targeted at prevention and cessation of substance use during pregnancy may be helpful in further reducing the rate of VLBW infants. Further promotion of folic acid intake can help to reduce the rate of NTDs.

Other actions taken after birth can significantly improve infants' health and chances of survival. Breastfeeding has been shown to reduce rates of infection in infants and to improve maternal health.[19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32] SIDS may be preventable as well: studies show that putting infants to sleep on their backs can help to prevent SIDS.[33]

Interim Progress Toward Year 2000 Objectives

Of the 17 maternal and infant health objectives included in Healthy People 2000, progress has been made toward the target in 8 objectives, and the movement has been away from the target in 5 objectives. Notable gains have been made in the areas of infant death, fetal death, cesarean delivery (particularly repeat cesareans), breastfeeding, early use of prenatal care, hospitalization for complications of pregnancy, abstinence from tobacco use during pregnancy, and screening for fetal abnormalities and genetic disorders. However, no progress or movement in the wrong direction has occurred in the areas of maternal death, FAS, and LBW. For the other objectives, there has been mixed progress, or data remain unavailable. Child health objectives were not included in the Maternal and Infant focus area in Healthy People 2000.

Note: Unless otherwise noted, data from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-1999.*

Healthy People 2010–Summary of Objectives

Maternal, Infant, and Child Health

Goal: Improve the health and well-being of women, infants, children, and families.

Number	Objective
Fetal, Infant, and Child Deaths	
16-1	Fetal and infant deaths
16-2	Child deaths
16-3	Adolescent and young adult deaths
Maternal Death and Illness	
16-4	Maternal deaths
16-5	Maternal illness and complications due to pregnancy
Prenatal Care	
16-6	Prenatal care
16-7	Childbirth classes
Obstetrical Care	
16-8	Very low birth weight infants born at Level III hospitals
16-9	Cesarean deliveries
Risk Factors	
16-10	Low birth weight and very low birth weight
16-11	Preterm birth
16-12	Weight gain during pregnancy
16-13	Infants put to sleep on their backs
Developmental Disabilities and Neural Tube Defects	
16-14	Developmental disabilities
16-15	Spina bifida and other neural tube defects
16-16	Optimum folic acid
Prenatal Substance Exposure	
16-17	Prenatal substance exposure
16-18	Fetal alcohol syndrome

Breastfeeding, Newborn Screening, and Service Systems

16-19	Breastfeeding
16-20	Newborn bloodspot screening
16-21	Sepsis among infants with sickle cell disease
16-22	Medical home for children with special health care needs
16-23	Service systems for children with special health care needs

Fetal, Infant, and Child Deaths

16-1. Reduce fetal and infant deaths.

Target and baseline:

Objective	Reduction in Fetal and Infant Deaths	1997 Baseline	2010 Target
		Per 1,000 Live Births Plus Fetal Deaths	
16-1a.	At 20 or more weeks of gestation	6.8	4.1
16-1b.	During perinatal period (28 weeks of gestation to 7 days or more after birth)	7.5	4.5

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Live Births Plus Fetal Deaths, 1997 (unless noted)	16-1a. Death at 20 or More Weeks of Gestation	16-1b. Death During Perinatal Period
	Rate per 1,000	
TOTAL	6.8	7.5
Mother's race and ethnicity		
American Indian or Alaska Native	6.7	7.9
Asian or Pacific Islander	4.8	4.6
Asian	4.2	4.6
Native Hawaiian and other Pacific Islander	6.2	7.3
Black or African American	12.5	13.4
White	5.8	6.4
Hispanic or Latino	5.9	6.5
Not Hispanic or Latino	DNA	7.2
Black or African American	9.6	12.7
White	5.2	6.0

Live Births Plus Fetal Deaths, 1997 (unless noted)	16-1a. Death at 20 or More Weeks of Gestation	16-1b. Death During Perinatal Period
	Rate per 1,000	
Gender		
Female	DNA	DNA
Male	DNA	DNA
Mother's age		
Under 15 years	14.2	DNA
15 to 19 years	7.8	DNA
20 to 24 years	6.4	DNA
25 to 29 years	6.0	DNA
30 to 34 years	6.3	DNA
35 years and older	8.9	DNA
Mother's education level		
Less than high school	6.5	DNA
High school graduate	6.7	DNA
At least some college	4.8	DNA
Fetal weight		
> 2,499g	1.3	DNA
1,500 to 2,499g	16.8	DNA
< 1,500g	213.1	DNA
Mother's disability status		
Mothers with disabilities	DNC	DNC
Mothers without disabilities	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Target and baseline:

Objective	Reduction in Infant Deaths	1998 Baseline*	2010 Target
		Rate per 1,000 Live Births	
16-1c.	All infant deaths (within 1 year)	7.2	4.5
16-1d.	Neonatal deaths (within the first 28 days of life)	4.8	2.9
16-1e.	Postneonatal deaths (between 28 days and 1 year)	2.4	1.5

*Preliminary data

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Live Births, 1997*	**16-1c. All Infant Deaths (< 1 year)**	**16-1d. Neonatal Deaths (< 28 days)**	**16-1e. Postneonatal Deaths (28 to 364 days)**
	Rate per 1,000		
TOTAL	7.2	4.8	2.5
Mother's race and ethnicity			
American Indian or Alaska Native	8.7	4.5	4.2
Asian or Pacific Islander	5.0	3.2	1.8
Asian	4.6	3.0	1.6
Native Hawaiian and other Pacific Islander	7.9	5.1	2.8
Black or African American	13.7	9.2	4.5
White	6.0	4.0	2.1
Hispanic or Latino	6.0	4.0	2.0
Not Hispanic or Latino	7.4	4.9	2.5
Black or African American	13.7	9.4	4.5
White	6.0	3.9	2.1
Gender			
Female	6.5	4.3	2.1
Male	7.9	5.2	2.7
Mother's age			
Under 15 years	19.0	12.4	6.6
15 to 19 years	10.3	6.2	4.1
20 to 24 years	8.0	4.9	3.2
25 to 29 years	6.2	4.3	1.9
30 to 34 years	5.8	4.2	1.6
35 years and older	7.1	5.2	2.0
Mother's education level			
Less than high school	9.2	5.3	4.0
High school graduate	7.6	5.0	2.6
At least some college	5.3	3.7	1.5

Live Births, 1997*	16-1c. All Infant Deaths (< 1 year)	16-1d. Neonatal Deaths (< 28 days)	16-1e. Postneonatal Deaths (28 to 364 days)
	Rate per 1,000		
Infant birth weight			
> 2,499g	2.7	1.0	1.7
1,500 to 2,499g	16.7	9.5	7.2
< 1,500g	252.8	223.8	29.0
Mother's disability status			
Mothers with disabilities	DNC	DNC	DNC
Mothers without disabilities	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*New data for population groups will be added when available.

Target and baseline:

Objective	Reduction in Infant Deaths Related to Birth Defects	1998 Baseline* (unless noted)	2010 Target
		Rate per 1,000 Live Births	
16-1f.	All birth defects	1.6	1.1
16-1g.	Congenital heart defects	0.54 (1997)	0.38

*Preliminary data

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Live Births, 1997* (unless noted)	16-1f. All Infant Deaths From All Birth Defects	16-1g. All Infant Deaths From Congenital Heart Defects
	Rate per 1,000	
TOTAL	1.6	0.54
Mother's race and ethnicity		
American Indian or Alaska Native	1.7	0.62
Asian or Pacific Islander	1.4	0.47

Live Births, 1997* (unless noted)	16-1f. All Infant Deaths From All Birth Defects	16-1g. All Infant Deaths From Congenital Heart Defects
	Rate per 1,000	
Asian	1.2	0.39
Native Hawaiian and other Pacific Islander	DSU	DSU
Black or African American	1.8	0.59
White	1.6	0.53
Hispanic or Latino	1.7	0.53
Not Hispanic or Latino	1.6	0.54
Black or African American	1.8	0.60
White	1.5	0.53
Gender		
Female	1.6 (1995)	DNA
Male	1.8 (1995)	DNA
Mother's education level		
Less than high school	2.1	0.59
High school graduate	1.7	0.61
At least some college	1.3	0.45
Disability status (of infant)		
Persons with disabilities	DNC	DNC
Persons without disabilities	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*New data for population groups will be added when available.

16-1h. Reduce deaths from sudden infant death syndrome (SIDS).

Target: 0.30 deaths per 1,000 live births.

Baseline: 0.77 deaths per 1,000 live births were from SIDS in 1997.

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Live Births, 1997	SIDS Deaths Rate per 1,000
TOTAL	0.77
Mother's race and ethnicity	
American Indian or Alaska Native	1.56
Asian or Pacific Islander	0.51
Asian	0.45
Native Hawaiian and other Pacific Islander	DSU
Black or African American	1.43
White	0.65
Hispanic or Latino	0.47
Not Hispanic or Latino	0.85
Black or African American	1.46
White	0.71
Gender	
Female	DNA
Male	DNA
Mother's education level	
Less than high school	1.48
High school graduate	0.90
At least some college	0.41
Disability status (of infant)	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Infant death is a critical indicator of the health of a population. It reflects the overall state of maternal health, as well as the quality and accessibility of primary health care available to pregnant women and infants. Despite steady declines in the 1980s and 1990s, the rate of infant mortality in the United States remains among the highest in the industrialized world.[1] Moreover, the rate of decline in infant mortality has slowed since the 1970s, when major advances in neonatal care contributed to steep reductions in the neonatal mortality rate. However, the rapid decline in this rate slowed during the 1980s. In the early 1990s, the introduction of synthetic surfactant contributed to declines in neonatal mortality rates through decreased new cases of intraventricular hemorrhage and decreased severity of respiratory disease in preterm, very small infants.[33, 34]

The health of infants depends in large part on their health in utero. A fetus with severe defects or growth problems may not be delivered alive. Because only live births are counted in infant mortality rates, perinatal and fetal mortality rates provide a more complete picture of perinatal health than does the infant mortality rate alone.

Fetal death often is associated with maternal complications of pregnancy, such as problems with amniotic fluid levels and blood disorders. Rates of fetal mortality are 35 percent greater than average in women who use tobacco during pregnancy and 77 percent higher in women who use alcohol. Fetal mortality rates also are high when birth defects, such as anencephalus, renal agenesis, and hydrocephalus, are present. The baseline fetal mortality rate of 7 per 1,000 represents only a 6.7 percent reduction since 1990, an average rate of decline of 1.3 percent per year. The fetal mortality rate among African Americans was 12.7 per 1,000 in 1995, 1.8 times that of the population as a whole. Moreover, this gap has widened since 1990. The rate among African Americans declined by only 4.5 percent over this period, a decline of less than 1 percent per year. Targeting prenatal risk screening and intervention to high-risk groups, particularly African American women, is critical to reducing this gap.

The perinatal mortality rate includes both deaths of live-born infants through the first 7 days of life and fetal deaths after 28 weeks of gestation. This rate includes both deaths of live-born infants and fetal deaths and is a useful overall measure of perinatal health and the quality of health care provided to pregnant women and newborns. The rate of perinatal mortality has declined by 40 percent since 1980. The gap between African Americans and whites has increased, however, with the rate among African Americans now more than twice that of whites.

The infant mortality rate is made up of two components: neonatal mortality (death in the first 28 days of life) and postnatal mortality (death after the first month but within the first year).The leading causes of neonatal death include birth defects, disorders related to short gestation and LBW, and pregnancy complications. Of these, the most likely to be preventable are those related to preterm birth and LBW, which represent approximately 20 percent of neonatal deaths. Postneonatal death reflects events experienced in infancy, including SIDS, birth defects, injuries, and homicide. Birth defects, many of which are unlikely to be preventable given current scientific knowledge, account for approximately 17 percent of postneonatal deaths; the remainder are likely to stem from preventable causes. SIDS is the leading cause of postneonatal death among all racial and ethnic groups, representing nearly one-third of all cases of postneonatal death. Moreover, the rate of SIDS among African Americans is 1.6 per 1,000 live births, twice that of whites. Therefore, a reduction in the rate of death from SIDS, particularly among African Americans, would contribute greatly to reducing the overall infant mortality rate and particularly to closing the racial gap in postneonatal death. The 2010 target should be achievable with continued education. (See objective 16-13 for further discussion of interventions that can help to prevent SIDS).

Rates of death from birth defects can be reduced either by preventing the occurrence of the defect itself or by providing the necessary care to prevent death. In the case of NTDs, the birth defects themselves can be prevented (see objectives 16-17 and 16-18). Death from birth defects that are not so easily prevented, such as heart problems, can be reduced with access to appropriate medical care. (Respiratory distress syndrome, another leading cause of infant death, is not a birth defect but a consequence of prematurity.)

A particular issue in the reduction of infant death is the reduction of disparities among select populations, particularly as defined by race and ethnicity, maternal age, and infant birth weight. The gap between whites and African Americans in infant death is large and has not diminished.

16-2. Reduce the rate of child death.

Target and baseline:

Objective	Reduction in Deaths of Children	1998 Baseline* (unless noted)	2010 Target
		Rate per 100,000	
16-2a.	Children aged 1 to 4 years	34.2	25.0
16-2b.	Children aged 5 to 9 years	17.6	14.3

*Preliminary data

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Children, 1997*	**16-2a. Deaths of Children Aged 1 to 4 Years**	**16-2b. Deaths of Children Aged 5 to 9 Years**
	Rate per 100,000	
TOTAL	35.8	18.5
Mother's race and ethnicity		
American Indian or Alaska Native	59.1	27.0
Asian or Pacific Islander	25.1	14.4
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	59.2	30.1
White	31.6	16.2

Children, 1997*	16-2a. Deaths of Children Aged 1 to 4 Years	16-2b. Deaths of Children Aged 5 to 9 Years
	Rate per 100,000	
Hispanic or Latino	31.3	15.6
Not Hispanic or Latino	36.6	18.9
Black or African American	61.8	31.4
White	31.1	16.0
Gender		
Female	31.8	16.6
Male	39.8	20.2
Family income level		
Poor	DNC	DNC
Near poor	DNC	DNC
Middle/high income	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*New data for population groups will be added when available.

The deaths of children after infancy also present a public health concern and an opportunity for prevention. In 1996, 14,074 children aged 1 to 14 years died, representing a death rate of 26.1 per 100,000 children in that age group. The leading cause of death for children of all ages is injury, which accounts for 13.8 deaths per 100,000 preschool children (aged 1 to 4 years) and 8.9 deaths per 100,000 school-aged children (aged 5 to 14 years). Among children aged 1 to 4 years, the leading injury-related causes of death are motor vehicle crashes, drowning, and fires and burns. Among those aged 5 to 14 years, the leading causes of death include motor vehicle crashes and firearms (including unintentional deaths, homicides, and suicides). These deaths are, for the most part, preventable. Other leading causes of death among children that are less likely to be preventable include birth defects (representing 4.1 deaths per 100,000 children aged 1 to 4 years and 1.2 deaths per 100,000 children aged 5 to 14 years), malignant neoplasms (representing 2.7 deaths per 100,000 children aged 1 to 4 years and 2.7 deaths per 100,000 children aged 5 to 14 years), and heart disease (representing 1.4 deaths per 100,000 children aged 1 to 4 years and 0.9 deaths per 100,000 children aged 5 to 14 years).

16-3. Reduce deaths of adolescents and young adults.

Objective	Reduction in Deaths of Adolescents and Young Adults	1998 Baseline*	2010 Target
		Rate per 100,000	
16-3a.	Adolescents aged 10 to 14 years	21.8	16.8
16-3b.	Adolescents aged 15 to 19 years	69.7	43.2
16-3c.	Young adults aged 20 to 24 years	93.8	57.3

*Preliminary data.

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Adolescents and Young Adults, 1997*	16-3a. Deaths of Adolescents Aged 10 to 14 Years	16-3b. Deaths of Adolescents Aged 15 to 19 Years	16-3c. Deaths of Young Adults Aged 20 to 24 Years
	Rate per 100,000		
TOTAL	23.2	74.8	98.6
Race and ethnicity			
American Indian or Alaska Native	24.2	108.9	132.6
Asian or Pacific Islander	16.9	43.3	57.4
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	32.1	107.6	175.1
White	21.8	69.5	86.2
Hispanic or Latino	19.0	72.6	101.5
Not Hispanic or Latino	23.7	74.8	97.7
Black or African American	33.3	111.1	181.9
White	21.9	67.7	81.4
Gender			
Female	18.3	43.4	49.5
Male	27.9	104.5	145.3
Family income level			
Poor	DNC	DNC	DNC

Adolescents and Young Adults, 1997*	16-3a. Deaths of Adolescents Aged 10 to 14 Years	16-3b. Deaths of Adolescents Aged 15 to 19 Years	16-3c. Deaths of Young Adults Aged 20 to 24 Years
	Rate per 100,000		
Near poor	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC
Disability status			
Persons with disabilities	DNC	DNC	DNC
Persons without disabilities	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*New data for population groups will be added when available.

The deaths of young adolescents, older adolescents, and young adults are more likely to be due to external causes than to congenital diseases. There were 4,550 deaths among adolescents aged 10 to 14 years in 1996, for a mortality rate of 23.97 per 100,000. The leading cause of death for adolescents in this age group was motor vehicle crashes at 5.8 deaths per 100,000, or 24.2 percent of the total mortality. Other unintentional injuries, (such as falls, drownings, and poisonings) caused 3.91 deaths per 100,000 (16.4 percent); homicides caused 1.76 deaths per 100,000 (7.4 percent); suicides caused 1.56 deaths per 100,000 (6.5 percent); and AIDS caused 0.38 deaths per 100,000 (1.6 percent). Fifty-six percent of the total deaths in this age group, therefore, can be attributed to unnecessary (that is, preventable) causes. Other causes of death for this age group that are less amenable to prevention strategies given current scientific knowledge include malignant neoplasms, which caused 2.66 deaths per 100,000 (11.1 percent); birth defects, which caused 1.13 deaths per 100,000 (4.7 percent); diseases of the heart, which caused 1.08 deaths per 100,000 (4.5 percent); and a combination of other causes, the cause of 4.51 deaths per 100,000 (18.8 percent).[15]

There were 14,663 deaths in 1996 among adolescents aged 15 to 19 years, for a death rate of 78.6 per 100,000. The leading cause of death for adolescents in this age group was motor vehicle crashes at 28.55 deaths per 100,000, or 36.3 percent of total deaths. Other unintentional injuries (such as falls, drownings, and poisonings) caused 7.64 deaths per 100,000 (9.7 percent); homicides caused 15.66 deaths per 100,000 (19.9 percent); suicides caused 9.73 deaths per 100,000 (12.4 percent); and AIDS caused 0.26 deaths per 100,000 (0.3 percent). Consequently, a majority (78 percent) of the total mortality in this age group can be attributed to unnecessary (that is, preventable) causes. The remaining 22 percent of deaths among adolescents aged 15 to 19 years resulted mostly from malignant neoplasms which caused 3.67 deaths per 100,000 (4.7 percent); diseases of the heart caused

2.18 deaths per 100,000 (2.8 percent); birth defects caused 1.02 deaths per 100,000 (1.3 percent); and a combination of other causes caused 8.42 deaths per 100,000 (10.7 percent).

Young adults aged 20 to 24 years had a death rate of 101.3 per 100,000 in 1996—a rate 322 percent higher than adolescents aged 10 to 14 years, and 29 percent higher than adolescents aged 15 to 19 years. The leading cause of death for persons aged 20 to 24 years was motor vehicle crashes at 29.88 deaths per 100,000, or 29.5 percent of the total deaths. Other unintentional injuries (such as falls, drownings, and poisonings) caused 10.28 deaths per 100,000 (10.2 percent); homicides caused 20.63 deaths per 100,000 (20.4 percent); suicides caused 14.47 deaths per 100,000 (14.3 percent); and AIDS caused 2.06 deaths per 100,000 (2 percent). Consequently, a majority (76 percent) of the total deaths in this age group can be attributed to unnecessary (that is, preventable) causes. The remaining 24 percent of deaths among young adults aged 20 to 24 years resulted mostly from malignant neoplasms which caused 5.39 deaths per 100,000 (5.3 percent); diseases of the heart caused 3.2 deaths per 100,000 (3.2 percent); birth defects caused 1.08 deaths per 100,000 (1.1 percent); and a combination of other causes caused 12.3 deaths per 100,000 (12.7 percent).

These mortality data, however, do not adequately reflect consequences of sexual behaviors established as individuals in this age group become sexually mature. Illustratively, it is likely that most of the new HIV infections that occur each year occur among those between age 13 and 21 years. Further, about three million new and sexually transmitted disease infections (STDs) in addition to HIV occur among teenagers each year. In addition, about 1 million teenagers become pregnant each year.

Maternal Death and Illness

16-4. Reduce maternal deaths.

Target: 3.3 maternal deaths per 100,000 live births.

Baseline: 8.4 maternal deaths per 100,000 live births in 1997.

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Live Births, 1997	**Maternal Deaths** Rate per 100,000
TOTAL	8.4
Mother's race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	20.8
White	5.8
Hispanic or Latino	8.0
Not Hispanic or Latino	DNA
Black or African American	DNA
White	5.2
Mother's age	
Under 20 years	5.7
20 to 24 years	6.6
25 to 29 years	7.9
30 to 34 years	8.3
35 years and older	16.1
Mother's education level	
Less than high school	DNA
High school graduate	DNA
At least some college	DNA
Mother's disability status	
Mothers with disabilities	DNC
Mothers without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

16-5. Reduce maternal illness and complications due to pregnancy.

Target and baseline:

Objective	Reduction in Maternal Illness and Complications	1997 Baseline	2010 Target
		Per 100 Deliveries	
16-5a.	Maternal complications during labor and delivery	32.1	20
16-5b.	Ectopic pregnancies	**Developmental**	
16-5c.	Postpartum complications, including postpartum depression	**Developmental**	

Target setting method: Better than the best.

Data source: National Hospital Discharge Survey, CDC, NCHS.

Potential data source: National Ambulatory Medical Care Survey (NAMCS) and National Hospital Discharge Survey (NHDS), CDC, NCHS.

Deliveries, 1997	**16-5a. Maternal Complications During Labor and Delivery** Rate per 100 Deliveries
TOTAL	32.1
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	39.2
White	30.7
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Black or African American	DSU
White	DSU

Deliveries, 1997	**16-5a. Maternal Complications During Labor and Delivery** Rate per 100 Deliveries
Age	
Under 15 years	DSU
15 to 19 years	35.8
20 to 24 years	31.5
25 to 29 years	31.1
30 to 34 years	31.4
35 years and older	32.8
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

In 1997, 327 maternal deaths were reported, the major causes of which were hemorrhage, ectopic pregnancy, pregnancy-induced hypertension, embolism, infection, and other complications of pregnancy and childbirth. The overall maternal mortality rate has fluctuated between approximately 7 and 8 per 100,000 live births since 1987 when it was 6.6 per 100,000 live births.[36] Moreover, the gap between African Americans and whites remains, with the maternal mortality rate among African Americans 3.5 times that of whites in 1996. The rates among African Americans have been at least three to four times higher than those of whites since 1940. The rate among African Americans also has not declined fluctuating between about 18 and 22 per 100,000 live births.[36]

Pregnancy and delivery can lead to serious physical and mental health problems for women. In the past, maternal illness and complications were monitored through objectives relating to the ratio of antenatal hospitalizations for pregnancy complications to the total number of deliveries. This ratio has become a less useful measure, however, as rates of antenatal hospitalization in general have declined due to managed care and its emphasis on outpatient treatment. Therefore, attention should be focused on the major causes of maternal illness and complications, particularly those most likely to be associated with maternal death, such as ectopic pregnancy. PID caused by chlamydia and gonorrhea is the leading cause of preventable tubal scarring that can result in ectopic pregnancy. (See Focus Area 25. Sexually Transmitted Diseases.) The outcomes of interest should include not only prenatal illness and complications and complications during labor and delivery, but also postpartum complications. Postpartum depression, for example, is disabling for a new mother and can compromise her ability to care for her infant.

Prenatal Care

16-6. Increase the proportion of pregnant women who receive early and adequate prenatal care.

Target and baseline:

Objective	Increase in Maternal Prenatal Care	1998 Baseline* (unless noted)	2010 Target
		Percent of Live Births	
16-6a.	Beginning in first trimester of pregnancy	83	90
16-6b.	Early and adequate prenatal care	74 (1997)	90

*Preliminary data.

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

ive Births, 1997*	Maternal Prenatal Care 16-6a. First Trimester	 16-6b. Adequate
	Percent	
TOTAL	83	74
Mother's race and ethnicity		
American Indian or Alaska Native	68	57
Asian or Pacific Islander	82	73
Asian	85	75
Native Hawaiian and other Pacific Islander	74	67
Black or African American	72	66
White	85	76

Live Births, 1997*	Maternal Prenatal Care	
	16-6a. First Trimester	16-6b. Adequate
	Percent	
Hispanic or Latino	74	65
Not Hispanic or Latino	85	76
Black or African American	72	66
White	88	79
Mother's age		
Under 15 years	47	47
15 to 19 years	68	63
20 to 24 years	77	70
25 to 29 years	86	77
30 to 34 years	89	79
35 years and older	88	79
Mother's education level		
Less than high school	68	60
High school graduate	81	73
Some college	91	81
Mother's disability status		
Mothers with disabilities	DNC	DNC
Mothers without disabilities	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
*New data for population groups will be added when available.

Prenatal care includes three major components: risk assessment, treatment for medical conditions or risk reduction, and education. Each component can contribute to reductions in perinatal illness, disability, and death by identifying and mitigating potential risks and helping women to address behavioral factors, such as smoking and alcohol use, that contribute to poor outcomes. Prenatal care is more likely to be effective if women begin receiving care early in pregnancy. Since 1990, the proportion of infants whose mothers entered prenatal care in the first trimester increased 8.8 percent, from 75.8 percent to 82.5 percent. Among African Americans, this proportion grew 19 percent and among Hispanics, 22 percent. Thus, increases in early entry into prenatal care have been concentrated in those populations whose perinatal illness and disability rates and mortality rates are highest and who are most likely to have low incomes. These increases are likely due, in part, to increased access to Medicaid coverage for pregnancy-related services and improved outreach by Medicaid programs.[37] In addition, the likelihood of early entry into prenatal care rises with age. The risk of poor birth outcomes is greatest among the youngest mothers (aged 15 years and under). Clearly, therefore, continued work is needed to educate women, particularly young women, about the need to begin prenatal care early in pregnancy.

Prenatal care should begin early and continue throughout pregnancy, according to accepted standards of periodicity. For example, the American College of Obstetricians and Gynecologists recommends that women receive at least 13 prenatal visits during a full-term pregnancy.[38] Therefore, assessment of the adequacy of the care pregnant women receive must include monitoring not only the month of initiation of prenatal care but also the adequacy of the care they receive throughout pregnancy. The Adequacy of Prenatal Care Utilization Index (APNCU) measures two dimensions of care: the adequacy of initiation of care and the adequacy of the use of prenatal services once care has begun (by comparing actual use to the recommended number of visits based on the month of initiation of care and the length of the pregnancy).[39] These dimensions are combined to classify each woman's prenatal care history as inadequate, intermediate, adequate, or adequate-plus. The baseline rates presented above include all women who received either adequate or adequate-plus care.

Overall, nearly three-quarters of women receive adequate prenatal care. However, this proportion varies across racial and ethnic groups. Certain groups, such as American Indians or Alaska Natives and Samoans, are particularly likely to receive less-than-adequate prenatal care. The likelihood of receipt of adequate prenatal care rises with maternal age, with fewer than half of pregnant women aged 15 years and under receiving adequate care. Prevention of unwanted pregnancy in adolescents and education of women about the need for early, continuous prenatal care are essential.

16-7. (Developmental) Increase the proportion of pregnant women who attend a series of prepared childbirth classes.

Potential data sources: National Pregnancy and Health Survey, NIH, NICHD; National Survey of Family Growth (NSFG) or National Health Interview Survey (NHIS), CDC, NCHS.

As part of comprehensive prenatal care, a formal series of prepared childbirth classes conducted by a certified childbirth educator is recommended for all women by the Expert Panel on the Content of Prenatal Care.[40] These classes can help reduce women's pain[41] and anxiety[42] as they approach childbirth, making delivery a more pleasant experience and preparing women for what they will face as they give birth. A full series of sessions is recommended for women who have never attended. A refresher series of one or two classes is recommended for women who attended during a previous pregnancy. At a minimum, the childbirth classes should include information regarding the physiology of labor and birth, exercises and self-help techniques for labor, the role of support persons, family roles and adjustments, and preferences for care during labor and birth. The classes also should include an opportunity for the mother and her partner to have questions answered about providers, prenatal care, and other relevant issues, as well as to receive information regarding birth settings and cesarean childbirth. Attendance is recommended during the third trimester of pregnancy so that information learned will be used relatively soon after presentation. Classes should begin at the 31st or 32nd week and be completed no later than 38 weeks. The refresher class should be completed at any time between 36 and 38 weeks.

Obstetrical Care

16-8. Increase the proportion of very low birth weight (VLBW) infants born at Level III hospitals or subspecialty perinatal centers.

Target: 90 percent.

Baseline: 73 percent of VLBW infants were born at Level III hospitals or subspecialty perinatal centers in 1996-97.

Target setting method: 25 percent improvement (better than the best will be used when data are available.)

Data source: Title V Reporting System, HRSA, MCHB.

Much research has demonstrated the benefits of delivering high-risk infants in settings that have the technological capacity to care for them. Specifically, research has shown that VLBW infants have lower death rates when they are delivered at Level III hospitals, which are equipped to care for very small infants.[43, 44, 45] To ensure that high-risk pregnant women have access to appropriate levels of obstetric care, many States have implemented perinatal regionalization strategies and protocols for the transfer of high-risk women to Level III facilities. Evidence, however, indicates that these systems may be eroding as health care networks and financing systems change.[43, 46] The proportion of VLBW infants who are delivered in the Level III obstetric hospitals best equipped to provide appropriate neonatal care should be measured to monitor the continuing effectiveness of these systems and the appropriateness of the level of care delivered to high-risk pregnant women and infants.

16-9. Reduce cesarean deliveries among low-risk (full term, singleton, vertex presentation) women.

Target and baseline:

Objective	Reduction in Cesarean Delivery	1997 Baseline	2010 Target
		Percent	
16-9a.	No prior cesarean delivery	17.8	15.5
16-9b.	Prior cesarean delivery	71	63

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Low-Risk Women Who Gave Birth, 1997	16-9a. No Prior Cesarean Delivery	16-9b. Prior Cesarean Delivery
	Percent	
TOTAL	17.8	71
Mother's race and ethnicity		
American Indian or Alaska Native	16.3	64
Asian or Pacific Islander	17.7	68
Asian	18.8	70
Native Hawaiian and other Pacific Islander	15.6	66
Black or African American	20.0	72
White	17.4	71
Hispanic or Latino	17.4	75
Not Hispanic or Latino	17.9	70
Black or African American	20.1	72
White	17.4	69
Mother's age		
Under 15 years old	12.0	DSU
15 to 19 years	12.0	66
20 to 24 years	16.2	69
25 to 29 years	19.3	70
30 to 34 years	23.7	71
35 years and older	31.5	74

Low-Risk Women Who Gave Birth, 1997	16-9a. No Prior Cesarean Delivery	16-9b. Prior Cesarean Delivery
	Percent	
Mother's education level		
Less than high school	14.0	71
High school graduate	18.2	72
At least some college	19.5	70
Mother's disability status		
Mothers with disabilities	DNC	DNC
Mothers without disabilities	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

During the 1980s, rates of cesarean deliveries rose steadily, with a peak rate of 24.7 percent of deliveries reported in 1988. Since then, the rate has been slowly decreasing, with the majority of the decline attributable to a reduction in the rates of primary cesarean deliveries. In 1989, the rate of vaginal births among women who had a previous cesarean delivery was 18.9 percent; in 1996 it increased to 28.3 percent.[47] The improvements are likely to be attributable to use of such strategies as clearer guidelines for trials of labor and labor management, continual labor support, and focused attention on physician practice patterns.[48] Expert opinion called for use of risk-adjusted rates of cesarean deliveries (that is, rates standardized by patient characteristics) to monitor progress over time.[49] (The targets presented here apply to the population as a whole and are not intended to be used as practice outcome objectives for individual physicians or institutions, as the medical needs of the patients in each practice will vary.) In addition to monitoring rates of cesarean deliveries, the outcomes of these deliveries (for both the mother and the infant) should be watched closely to assure that changes in the mode of delivery do not put women or their infants at risk.

Risk Factors

16-10. Reduce low birth weight (LBW) and very low birth weight (VLBW).

Target and baseline:

Objective	Reduction in Low and Very Low Birth Weight	1998 Baseline*	2010 Target
		Percent	
16-10a.	Low birth weight (LBW)	7.6	5.0
16-10b.	Very low birth weight (VLBW)	1.4	0.9

*Preliminary data.

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Live Births, 1997*	16-10a. Low Birth Weight	16-10b. Very Low Birth Weight
	Percent	
TOTAL	7.5	1.4
Mother's race and ethnicity		
American Indian or Alaska Native	6.8	1.2
Asian or Pacific Islander	7.2	1.1
Asian	7.1	1.0
Native Hawaiian and other Pacific Islander	DSU	DSU
Black or African American	13.0	3.0
White	6.5	1.1
Hispanic or Latino	6.4	1.1
Not Hispanic or Latino	7.8	1.5
Black or African American	13.1	3.1
White	6.5	1.1
Gender		
Female	8.1	1.4
Male	7.0	1.4

Live Births, 1997*	16-10a. Low Birth Weight	16-10b. Very Low Birth Weight
	Percent	
Mother's age		
Under 15 years	13.6	3.1
15 to 19 years	9.5	1.8
20 to 24 years	7.4	1.4
25 to 29 years	6.6	1.2
30 to 34 years	6.9	1.3
35 years and older	8.6	1.7
Mother's education level		
Less than high school	9.0	1.6
High school graduate	7.9	1.5
At least some college	6.4	1.2
Mother's disability status		
Mothers with disabilities	DNC	DNC
Mothers without disabilities	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*New data for population groups will be added when available.

LBW is the risk factor most closely associated with neonatal death; thus, improvements in infant birth weight can contribute substantially to reductions in the infant death rate. Of all infants born at low birth weight, the smallest (those weighing less than 1,500g) are at highest risk of dying in their first year. However, some researchers have proposed that further improvement in the survival of VLBW infants is nearly impossible, and reduction in the underlying rate of VLBW births is the only avenue toward reduction of neonatal death rates.[50] Another important issue is the long-term effects of LBW on affected infants who survive their first year, as these infants are more likely to experience long-term developmental and neurologic disabilities than are infants of normal birth weight.[51, 52] Recent increases in LBW are due largely to preterm delivery related to increases in multiple gestation.

Smoking accounts for 20 to 30 percent of all LBW births in the United States. The effect of smoking on LBW rates appears to be attributable to intrauterine growth retardation rather than to preterm delivery.[6] VLBW is primarily associated with preterm birth, which may be associated with the use of illicit drugs during pregnancy.

16-11. Reduce preterm births.

Target and baseline:

Objective	Reduction in Preterm Births	1997 Baseline	2010 Target
		Percent	
16-11a.	Total preterm	11.4	7.6
16-11b.	Live births at 32 to 36 weeks of gestation	9.4	6.4
16-11c.	Live births at less than 32 weeks of gestation	1.9	1.1

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Live Births, 1997	16-11a. All Preterm Births	16-11b. 32 to 36 Weeks of Gestation	16-11c. Less Than 32 Weeks of Gestation
		Percent	
TOTAL	11.4	9.4	1.9
Mother's race and ethnicity			
American Indian or Alaska Native	12.2	10.2	2.1
Asian or Pacific Islander	10.2	8.8	1.4
Asian	9.5	8.3	1.2
Native Hawaiian and other Pacific Islander	11.0	9.1	1.9
Black or African American	17.5	13.3	4.2
White	10.2	8.7	1.5
Hispanic or Latino	11.2	9.5	1.7
Not Hispanic or Latino	11.4	9.4	2.0
Black or African American	17.6	13.4	4.2
White	9.9	8.5	1.5
Gender			
Female	DNA	DNA	DNA
Male	DNA	DNA	DNA

Live Births, 1997	16-11a. All Preterm Births	16-11b. 32 to 36 Weeks of Gestation	16-11c. Less Than 32 Weeks of Gestation
		Percent	
Mother's age			
Under 15 years	21.8	16.0	5.8
15 to 19 years	13.7	11.0	2.7
20 to 24 years	11.2	9.3	1.9
25 to 29 years	10.3	8.7	1.6
30 to 34 years	10.6	8.9	1.7
35 years and older	12.6	10.5	2.1
Mother's education level			
Less than high school	13.4	11.0	2.4
High school graduate	11.8	9.7	2.1
At least some college	9.9	8.4	1.5
Mother's disability status			
Mothers with disabilities	DNC	DNC	DNC
Mothers without disabilities	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Approximately two-thirds of LBW infants and 98 percent of VLBW infants are born preterm. In addition, preterm birth is the leading cause of those neonatal deaths not associated with birth defects. Survival rates of infants have been shown to increase as gestational age advances, even among very preterm infants.[53, 54] Therefore, reduction in preterm delivery holds the greatest promise for overall reduction in infant illness, disability, and death. Because the specific causes of preterm delivery are unclear, research is needed before tailored interventions can be developed.[55, 56] Preterm birth is associated with a number of modifiable risk factors, including the use of alcohol, tobacco, or other drugs during pregnancy[57, 58] and low prepregnancy weight or low weight gain during pregnancy.[59, 60] Other important risk factors for preterm birth are vaginal infections[61, 62, 63] and domestic violence.

Rates of preterm delivery in the United States increased over the last three decades of the 20th century.[4, 59] Between 1989 and 1996, this increase was due largely to an increase in multiple gestation. The gap between African American and white infants persists as well, for reasons that are largely unexplained[64] and have been shown to be independent of other known risk factors.[57, 65] Risk factors that African American women may disproportionately experience include short interpregnancy intervals[66] and exposure to psychosocial stress.[65, 67]

16-12. (Developmental) Increase the proportion of mothers who achieve a recommended weight gain during their pregnancies.

Potential data source: National Vital Statistics System (NVSS), CDC, NCHS.

Current evidence indicates that gestational weight gain, particularly during the second and third trimesters, is an important determinant of fetal growth. Inadequate weight gain during pregnancy is associated with an increased risk of IUGR, LBW, and infant death.[68, 69, 70] Maternal weight gain is susceptible to intervention and represents an avenue for prevention of poor birth outcomes. The Institute of Medicine's 1990 guidelines for weight gain in pregnancy recommend a graduated level of weight gain based on a woman's prepregnancy body mass index (BMI) (that is, the ratio of her weight to her height).[68] Under these guidelines, a woman with normal BMI should gain 25 to 35 pounds during pregnancy. Those with below-normal BMI should gain 28 to 40 pounds. Overweight women should gain 15 to 25 pounds.

In 1988, approximately three-quarters of married women who delivered at full term gained the recommended weight during pregnancy.[71] Two groups of women who continue to gain less than the recommended level of weight during pregnancy—teenagers and African American women—also are at particularly high risk for having LBW infants and other adverse pregnancy outcomes.

16-13. Increase the percentage of healthy full-term infants who are put down to sleep on their backs.

Target: 70 percent.

Baseline: 35 percent of healthy full-term infants were put down to sleep on their backs in 1996.

Target setting method: Better than the best.

Data source: National Infant Sleep Position Study, NIH, NICHD.

Infants, 1996	**Put Down To Sleep on Back** Percent
TOTAL	35
Mother's race and ethnicity	
American Indian or Alaska Native	DNA
Asian or Pacific Islander	DNA

Infants, 1996	**Put Down To Sleep on Back** Percent
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	17
White	37
Hispanic or Latino	28
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	DNA
Male	DNA
Mother's age	
Under 15 years	DNA
15 to 19 years	DNA
20 to 24 years	DNA
25 to 29 years	DNA
30 to 34 years	DNA
35 years and older	DNA
Mother's education level	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC
Mother's disability status	
Mothers with disabilities	DNC
Mothers without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Much research has shown that a nonprone sleeping position (that is, sleeping on the side or back rather than the stomach) greatly decreases the risk of SIDS among healthy full-term infants.[72, 73] However, healthy preterm infants have been shown to be more vulnerable to respiratory problems when put to sleep on their backs.[74] The American Academy of Pediatrics has recommended that healthy full-term infants be put down to sleep on their backs. The National Institute of Child Health and Human Development and the Maternal and Child Health Bureau instituted the "Back to Sleep" campaign in 1994 to educate parents and physicians about this recommendation. While the percentage of infants put to sleep on their stomachs dropped dramatically between 1992 and 1997, much of the improvement was in the percentage of infants put to sleep on their sides. Although not as dangerous as the stomach, from this position infants may roll onto their stomachs. Therefore, the objective focuses on increasing the percentage of infants who are put down to sleep on their backs.

Developmental Disabilities and Neural Tube Defects

16-14. Reduce the occurrence of developmental disabilities.

Target and baseline:

Objective	Reduction in Developmental Disabilities in Children	1991–94 Baseline	2010 Target
		Rate per 10,000	
16-14a.	Mental retardation	131*	124
16-14b.	Cerebral palsy	32.2†	31.5
16-14c.	Autism spectrum disorder	**Developmental**	
16-14d.	Epilepsy	**Developmental**	

*Children aged 8 years in metropolitan Atlanta, GA, having an IQ of 70 or less.

†Children aged 8 years in metropolitan Atlanta, GA.

Target setting method: 5 percent improvement.

Data source: Metropolitan Atlanta Developmental Disabilities Surveillance Program (MADDSP), CDC, NCEH.

Children Aged 8 Years, Atlanta, GA, 1991–94	16-14a. Mental Retardation	16-14b. Cerebral Palsy
	Rate per 10,000	
TOTAL	131	32.2
Race and ethnicity		
American Indian or Alaska Native	DNA	DNA
Asian or Pacific Islander	DNA	DNA
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	210	38.4
White	85	30.4

Children Aged 8 Years, Atlanta, GA, 1991–94	16-14a. Mental Retardation	16-14b. Cerebral Palsy
	Rate per 10,000	
Hispanic or Latino	DNA	DNA
Not Hispanic or Latino	DNA	DNA
Black or African American	DNA	DNA
White	DNA	DNA
Gender		
Female	107	30.8
Male	154	35.5
Family income level		
Poor	DNC	DNC
Near poor	DNC	DNC
Middle/high income	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Specific developmental disabilities will be monitored among school-aged children since not all occurrences are manifested or recognized until those ages. A reduction in the rate of LBW, as proposed in objective 16-10, can be expected to result in a lower number of occurrences of most developmental disabilities, because LBW is such a strong risk factor. Interventions to reduce the occurrence of some intrauterine infections (for example, congenital rubella syndrome) and increased access to genetic counseling should reduce prenatal causes of developmental disabilities. The early identification and prophylactic treatment of sickle-cell disease are expected to reduce the occurrence of postnatal cerebrovascular complications, which are known postnatal causes of cerebral palsy and mental retardation. Increased safety belt use and other measures to prevent unintentional childhood injury, interventions to prevent child abuse, *Haemophilus influenzae* immunization, and increased access to medical care to reduce meningitis also will reduce the occurrences of developmental disabilities due to postnatal causes.

The Metropolitan Atlanta Developmental Disabilities Surveillance Program (MADDSP) is the only high-quality surveillance system that monitors the prevalence of mental retardation and other developmental disabilities. MADDSP is a regional data source from a principally urban area, and therefore MADDSP findings cannot be generalized to the Nation; in particular, MADDSP findings may not be representative of rural regions. Efforts are underway to use MADDSP methods to build similar data systems in other regions of the country.

16-15. Reduce the occurrence of spina bifida and other neural tube defects (NTDs).

Target: 3 new cases per 10,000 live births.

Baseline: 6 new cases of spina bifida or another NTD per 10,000 live births in 1996.

Target setting method: 50 percent improvement (better than the best will be used when data are available).

Data source: National Birth Defects Prevention Network (NBDPN), CDC, NCEH.

Live Births, 1996	New Cases of Spina Bifida or Other NTDs Rate per 10,000
TOTAL	6
Mother's race and ethnicity	
American Indian or Alaska Native	DNA
Asian or Pacific Islander	DNA
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA
White	DNA
Hispanic or Latino	DNC
Not Hispanic or Latino	DNC
Black or African American	DNC
White	DNC
Gender	
Female	DNA
Male	DNA
Mother's education level	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC
College graduate	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

16-16. Increase the proportion of pregnancies begun with an optimum folic acid level.

Target and baseline:

Objective	Increase in Pregnancies Begun With Optimum Folic Acid Level	1991–94 Baseline*	2010 Target
		Percent	
16-16a.	Consumption of at least 400 µg of folic acid each day from fortified foods or dietary supplements by nonpregnant women aged 15 to 44 years	21	80
		Number	
16-16b.	Median RBC folate level among nonpregnant women aged 15 to 44 years	161 ng/ml	220 ng/ml

*Preliminary estimate.

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Nonpregnant Women Aged 15 to 44 Years, 1991–94	16-16a. Adequate Folic Acid	16-16b. Median RBC Folate Level
	Percent	ng/ml
TOTAL	21	161
Race and ethnicity		
American Indian or Alaska Native	DSU	DSU
Asian or Pacific Islander	DSU	DSU
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	DNA	DNA
White	DNA	DNA
Hispanic or Latino	DSU	DSU
Mexican American	13	144
Not Hispanic or Latino	DSU	DNA
Black or African American	17	123
White	23	170

Nonpregnant Women Aged 15 to 44 Years, 1991–94	16-16a. Adequate Folic Acid Percent	16-16b. Median RBC Folate Level ng/ml
Education level		
Less than high school	DNC	DNA
High school graduate	DNC	DNA
At least some college	DNC	DNA
Disability status		
Persons with disabilities	DSU	DNA
Persons without disabilities	DSU	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Data are preliminary.

NTDs, including spina bifida, occur when the fetal neural tube fails to close fully, interrupting development of the central nervous system. Approximately 50 percent of pregnancies affected with NTDs may be prevented with adequate consumption of folic acid from 1 month before conception through the first 3 months of pregnancy.[75] In 1992, the U.S. Public Health Service (PHS) recommended that all women of childbearing age consume 400 micrograms of folic acid daily. For women who already have had an NTD-affected pregnancy, PHS recommends that women consult with a health care professional about taking a much larger amount of folic acid—4,000 micrograms (4.0 milligrams)—when planning a pregnancy.[76] In 1998, the Institute of Medicine further recommended that to reduce the risk of an NTD-affected pregnancy, all women capable of becoming pregnant should consume 400 micrograms of folic acid daily, from fortified foods or supplements or a combination of the two, in addition to consuming folate-rich foods, such as orange juice, green vegetables, and beans.[77]

Most grain products (including enriched flour, breads, breakfast cereals, rice, and pasta) now are fortified with folic acid. However, the amount of folic acid that some segments of the reproductive-aged population might receive through their diet may not adequately meet the PHS recommendation of 400 micrograms daily. Thus, women capable of becoming pregnant need to review their dietary options, eat a diet that includes folate-rich foods, and target consumption of folic acid-fortified foods, as well as take a folic acid-containing supplement.

Prenatal Substance Exposure

16-17. Increase abstinence from alcohol, cigarettes, and illicit drugs among pregnant women.

Objective	Increase in Reported Abstinence in Past Month From Substances by Pregnant Women*	1996–97 Baseline	2010 Target
		Percent	
16-17a.	Alcohol	86	94
16-17b.	Binge drinking	99	100
16-17c.	Cigarette smoking†	87	98
16-17d.	illicit drugs	98	100

*Pregnant women aged 15 to 44 years.

†Smoking during pregnancy for all women giving birth in 1997 in 46 States, the District of Columbia, and New York City.

Target setting method: Better than the best for 16-17a, and 16-17c; complete elimination for 16-17b and 16-17d.

Data sources: National Household Survey on Drug Abuse, SAMHSA for 16-17a, 16-17b, and 16-17-d. National Vital Statistics System, CDC, NCHS for 16-17c.

Pregnant Women Aged 15 to 44 Years, 1996–97 (unless noted)	16-17a. Alcohol Abstinence, Past Month	16-17b. No Binge Drinking, Past Month	16-17c. No Cigarette Smoking, 1997*	16-17d. No Drugs, Past Month
	Percent			
TOTAL	86	99	87	98
Race and ethnicity				
American Indian or Alaska Native	DNA	DNA	79	DNA
Asian or Pacific Islander	DNA	DNA	97	DNA
Asian	DNC	DNC	98	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	85	DNC
Black or African American	DNA	DNA	90	DNA
White	DNA	DNA	86	DNA
Hispanic or Latino	93	99	96	99
Not Hispanic or Latino	DNA	DNA	85	DNA
Black or African American	83	99	90	95
White	85	99	83	98

Pregnant Women Aged 15 to 44 Years, 1996–97 (unless noted)	16-17a. Alcohol Abstinence, Past Month	16-17b. No Binge Drinking, Past Month	16-17c. No Cigarette Smoking, 1997*	16-17d. No Drugs, Past Month
	Percent			
Education level (aged 18 to 44 years)				
Less than high school	79	99	77	92
High school graduate	91	99	83	100
At least some college	DNA	98	94	DNA
College graduate	DNA	DNA	98	DNA
Disability status				
Persons with disabilities	DNC	DNC	DNC	DNC
Persons without disabilities	DNC	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Smoking during pregnancy for all women giving birth in 1997 in 46 States, the District of Columbia, and New York City.

A range of effects, including spontaneous abortion, LBW, and preterm delivery, have been associated with prenatal use of licit and illicit drugs, including alcohol, tobacco, cocaine, and marijuana. As discussed above, tobacco is associated with LBW and spontaneous abortion.[78] Heavy alcohol use is associated with FAS,[79] and even moderate alcohol use has demonstrated effects on preterm delivery.[80] The use of cocaine during pregnancy is associated with premature birth and impaired fetal growth.[8, 81, 82, 83] In addition, women who use cocaine are at especially high risk of infectious diseases, including hepatitis B and HIV. Exposure to marijuana in utero may be associated with LBW, preterm birth, and neurobehavioral functioning. However, isolating the effects of marijuana use on newborns is difficult because users of the drug often use alcohol and tobacco as well.[78]

Self-reported use of illicit drugs, such as cocaine and marijuana, is quite rare, with 97.5 percent of pregnant women reporting abstaining from these drugs. Rates of abstinence from harmful substances during pregnancy appear to be declining slowly. The use of alcohol during pregnancy, despite the established health risk, exemplifies this trend. In 1996-97, 86 percent of pregnant women abstained from alcohol use, an increase of 9 percent from the 1988 baseline. Rates of frequent drinking (at least seven drinks per week or at least five drinks on any occasion in the past month) among pregnant women have begun to decline, with only 1.3 percent of pregnant women reporting recent binge drinking in 1996-97, compared to 2.9 percent in 1994-95. Unintentional alcohol exposure is particularly likely to occur early in pregnancy, before a woman knows she is pregnant. In addition to the objectives presented here, objectives in Focus Area 26. Substance Abuse, address alcohol consumption among women of reproductive age and tobacco use by pregnant women.

16-18. (Developmental) Reduce the occurrence of fetal alcohol syndrome (FAS).

Potential data source: Fetal Alcohol Syndrome Network (FASNet), CDC, NCEH.

FAS is one of the leading preventable causes of mental retardation and a leading cause of birth defects, including growth deficiency and microcephaly. Affected children also are likely to show infantile irritability, poor coordination, hypotonia, and attention deficit/hyperactivity disorder.[80, 84] The diagnosis of FAS is based on three criteria: prenatal or postnatal growth retardation or both, central nervous system impairment, and characteristic facial malformations. Abnormalities of other organs and systems, however, have been noted in combination with these characteristics.[85] Estimates of the cases of FAS vary from 0.2 to 1.0 per 1,000 live births. In addition to FAS, studies have documented more subtle growth and neurodevelopmental deficits among children whose mothers drank alcohol during pregnancy. Alcohol-related birth defects and alcohol-related neurodevelopmental disorders are thought to occur three to four times more often than diagnosed cases of FAS. Because of these lifelong effects, and because a safe level of alcohol consumption during pregnancy has not been identified, the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists recommend that women who are pregnant or are planning a pregnancy abstain from the use of alcohol.[86, 87]

Despite broad agreement on the importance of FAS, consistent diagnosis of the syndrome at birth has been difficult to achieve. Thus, accurately estimating the number or proportion of infants affected by FAS is challenging for a number of reasons: the difficulty of evaluating an infant's central nervous system, lack of training among clinicians, inconsistent diagnostic criteria, clinicians' tendency to avoid associating their patients with the stigma of alcohol problems, and failures of mothers to report alcohol intake during gestation.[7]

Breastfeeding, Newborn Screening, and Service Systems

16-19. Increase the proportion of mothers who breastfeed their babies.

Target and baseline:

Objective	Increase in Mothers Who Breastfeed	1998 Baseline	2010 Target
		Percent	
16-19a.	In early postpartum period	64	75
16-19b.	At 6 months	29	50
16-19c.	At 1 year	16	25

Target setting method: Better than the best.

Data source: Mothers' Survey, Abbott Laboratories, Inc., Ross Products Division.

Mothers, 1998	Breastfed 16-19a. Early Postpartum	 16-19b. 6 Months	 16-19c. 1 Year
	Percent		
TOTAL	64	29	16
Race and ethnicity			
American Indian or Alaska Native	DNC	DNC	DNC
Asian or Pacific Islander	DNC	DNC	DNC
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	45	19	9
White	68	31	17
Hispanic or Latino	66	28	19
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Education level			
Less than high school	48	23	17
High school graduate	55	21	12
Some college	55	21	12
College graduate	78	40	22
Disability status			
Persons with disabilities	DNC	DNC	DNC
Persons without disabilities	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Breast milk is widely acknowledged to be the most complete form of nutrition for infants, with a range of benefits for infants' health, growth, immunity, and development. The benefits of breastfeeding include decreased new cases or severity of diarrhea,[19, 20, 21, 22, 30] respiratory infections,[23, 24] and ear infections,[20, 25, 26] among others, and reduced cost to the family.[27, 28] In addition, breastfeeding has been shown to improve maternal health, with demonstrated effects, including reduction in postpartum bleeding,[29] earlier return to prepregnancy weight,[30] reduced risk of premenopausal breast cancer,[31] and reduced risk of osteoporosis,[32] continuing long after the postpartum period. In general, the American Academy of Pediatrics considers breastfeeding to be "the ideal method of feeding and nurturing infants."[10]

Universal breastfeeding is not recommended in the United States. Women who use illicit drugs, who have active, untreated tuberculosis, or who test positive for HIV, as well as those who use certain prescribed drugs, should not breastfeed.[11, 88] In general, however, increasing the rate of breastfeeding, particularly among the low-income, racial, and ethnic populations less likely to begin breastfeeding in the hospital or to sustain it throughout the infant's first year, is an important public health goal.

Rates of breastfeeding are highest among college-educated women, and those aged 35 years and older. The lowest rates of breastfeeding are found among those whose infants are at highest risk of poor health and development: those aged 21 years and younger and those with low educational levels. However, many of these groups have shown the greatest increase in breastfeeding rates since 1989. Rates of breastfeeding among African American women during the postpartum period increased 65 percent, and rates of African American women breastfeeding at 6 months grew 81 percent between 1988 and 1997. Breastfeeding rates among women aged 20 years and under at both periods also increased substantially, as did those among women with a grade-school education.[12] While these improvements are encouraging, education of new mothers and their partners; education of health providers; changes in routine maternity ward practices; social support, including support from employers; and greater media portrayal of breastfeeding as the normal method of infant feeding are needed to increase breastfeeding rates among those at highest risk.

16-20. (Developmental) Ensure appropriate newborn bloodspot screening, followup testing, and referral to services.

16-20a. Ensure that all newborns are screened at birth for conditions mandated by their State-sponsored newborn screening programs, for example, phenylketonuria and hemoglobinopathies.

16-20b. Ensure that followup diagnostic testing for screening positives is performed within an appropriate time period.

16-20c. Ensure that infants with diagnosed disorders are enrolled in appropriate service interventions within an appropriate time period.

Potential data source: Title V Performance Measures, HRSA, MCHB, National Newborn Screening and Genetic Resource Center.

Newborn screening (NBS) programs began in the early 1960s with the development of a screening test for phenylketonuria and a system for blood sample collection on filter paper and transportation of that sample. Since then, all States and some territories of the United States have included NBS as part of their preventive public health system. NBS programs in the United States were the first population-based screening programs for genetic conditions and signaled the integration of genetic testing into public health programs. The mass screening of four million infants per year in the United States has been heralded as a successful program that is cost-effective and reduces illness, disability, and death associated with inherited conditions. The universal acceptance of newborn screening for specified conditions since 1960 attests to the undeniable benefits that flow from testing and appropriate treatment and intervention.

The array of screening tests performed by each State varies and is changing constantly. All State programs now include screening for phenylketonuria and congenital hypothyroidism. More than 40 programs screen for sickle cell disease and almost all screen for galactosemia. Others include congenital adrenal hyperplasia, homocystinuria, maple syrup urine disease, biotinidase deficiency, and tyrosinemia. A few States also include cystic fibrosis, additional metabolic disorders, and some other conditions such as congenital infections. Virtually all States treat or refer for treatment those with a confirmed diagnosis. However, some disorders are more uniformly screened for than others, and followup testing and early initiation of preventive treatment is uneven. For example, screening for PKU and congenital hypothyroidism is virtually universal, although reporting is not.[89, 90] Screening and followup for galactosemia, sickle cell disease, and other hemoglobinopathies have been less consistent.[89, 90] Sickle cell disease can lead to severe illness and early death and galactosemia leads to an increased risk of death from overwhelming infection in early infancy, failure to thrive, vomiting, liver disease, and mental retardation in untreated survivors.[91] Therefore, it is vital that screening be universally available, that screening be of the highest quality, that diagnostic testing be provided for those newborns who screen positive, and that followup treatment be offered to children with diagnosed disorders.[92, 93, 94]

16-21. (Developmental) Reduce hospitalization for life-threatening sepsis among children aged 4 years and younger with sickling hemoglobinopathies.

Potential data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

Significant illness, disability, and death are associated with sickle cell disease because of increased susceptibility to severe bacterial infections—meningitis, pneumonia, and septicemia—all major causes of death among children with the disorder.[95, 96, 97] Life-threatening episodes of sepsis from pneumococcus and other organisms are well recognized complications of sickle cell disease in children. The efficacy of daily oral penicillin prophylaxis in preventing infection among young children with sickle cell disease has been demonstrated.[98] Sepsis rates have been shown to be clearly improved by prophylactic therapy in the U.S. penicillin trial, but concerns about actual use of penicillin in large populations and about penicillin-resistant organisms necessitate continued monitoring of sepsis rates in large populations.

16-22. (Developmental) Increase the proportion of children with special health care needs who have access to a medical home.

Potential data source: Title V Reporting System.

Historically, services for children with special health care needs have been difficult for families to access and for providers to coordinate. Families must navigate a variety of organizations and providers and often face geographic and financial barriers to care. Primary care providers in the community are not always comfortable providing care to children with complex needs, nor do they have time to coordinate the variety of resources families need. A lack of knowledge of comprehensive needs and corresponding community-based resources and payment mechanisms presents a challenge for both families and providers. Poor communication between families and providers and cross-cultural misunderstandings are additional concerns for both families and providers.

Care for children with special health care needs should be provided and coordinated through a "medical home" that is accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally competent and linguistically appropriate. Physicians and parents share responsibility for ensuring that children and their families have access to all the medical and nonmedical services needed to help them achieve their maximum potential. The attributes of such a medical home are defined below:

- Accessible care is care is provided in the child's community, in which all insurance, including Medicaid, is accepted and changes in insurance status are accommodated.

- Family-centered care recognizes that the family is the principal caregiver and the center of strength and support for children. Family-centered services share unbiased and complete information with families on an ongoing basis.

- Continuous care assures that the same primary pediatric health care professionals are available from infancy through adolescence and provide assistance with transitions (to school, home, and adult services).

- Comprehensive health care is available 24 hours a day, 7 days a week, and addresses preventive, primary, and tertiary needs.

- Coordinated care links families to support, educational, and community-based services, and information is centralized.

- Compassionate caregivers express concern for the well-being of the child and family.

- Culturally competent and linguistically appropriate care recognizes, values, and respects the family's cultural background.[98,99,100,101,102]

16-23. Increase the proportion of Territories and States that have service systems for children with special health care needs.

Target: 100 percent.

Baseline: 15.7 percent of Territories and States met Title V for service systems for Children with Special Health Care Needs in FY 1997.

Target setting method: Total coverage.

Data source: Title V reporting system.

Children with special health care needs and their families often require a range of services.[103] Health services, for example, include health education and health promotion; preventive and primary care, including routine screening for impairments of vision, hearing, speech, and language and assessment of physical and psychosocial milestones; specialized diagnostic and therapeutic services; and habilitation and rehabilitation services. Early intervention services are necessary as well, as are educational, vocational, and mental health services and support services for children and their families. Enabling services, such as transportation and child care, are necessary to ensure access to care. Transition services are needed to assist in the progression from adolescent health care to adult services and from school to work.

Families continuously face the challenge of obtaining and coordinating the primary and special services their children require. Differing eligibility criteria, duplication and gaps in services, inflexible funding sources, and poor coordination among service sectors are some of the barriers consistently reported. Many of these issues can be resolved only through the concerted effort of a system of services—the broad array of public and private entities serving children and families in the Nation's communities. These service systems should ensure access to a source of insurance for primary and specialty care and enabling services, an identified medical home, and care coordination. Families and their care professionals should participate in the design and implementation of these service systems.[104] This collaborative partnership will strengthen the ability of families to care for their children with special needs and will enable children with complex conditions to live at home with their families.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services
1-1. Persons with health insurance
1-2. Health insurance coverage for clinical preventive services
1-4. Source of ongoing care
1-5. Usual primary care provider
1-6. Difficulties or delays in obtaining needed health care
1-9. Hospitalization for ambulatory-care-sensitive conditions
1-12. Single toll-free number for poison control centers
1-13. Trauma care systems
1-15. Special needs of children
5. Diabetes
5-8. Gestational diabetes
6. Disability and Secondary Conditions
6-2. Feelings and depression among children with disabilities
6-7. Congregate care of children and adults with disabilities
6-9. Children and youth with disabilities included in regular education programs
7. Educational and Community-Based Programs
7-1. High school completion
7-2. School health education
7-4. School nurse-to-student ratio
8. Environmental Health
8-11. Elevated blood lead levels in children
8-20. School policies to protect against environmental hazards
8-22. Lead-based paint testing
9. Family Planning
9.2. Birth spacing
9.7. Adolescent pregnancy
9-8. Abstinence before 15 years
9-9. Abstinence among adolescents aged 15 to 17 years
9-10. Pregnancy prevention and sexually transmitted disease protection
9-11. Pregnancy prevention education
13. HIV
13-17. Prenatally acquired HIV infection
14. Immunization and Infectious Diseases
14-1. Vaccine-preventable diseases
14-2. Hepatitis B in infants and young children
14-18. Antibiotics prescribed for ear infections
14-19. Antibiotics prescribed for colds
14-22. Universally recommended vaccination of children 19-35 months of age
14-23. Vaccination coverage for children in day care, kindergarten, and first grade
14-24. Fully immunized children 19-35 months
14-25. Providers who measure childhood vaccination coverage levels
14-26. State/community population-based immunization registries for children
14-27. Vaccination coverage among adolescents
14-30. Adverse events from vaccinations
14-31. Active surveillance for vaccine safety
15. Injury and Violence Prevention
15-1. Nonfatal head injuries
15-2. Nonfatal spinal cord injuries
15-3. Firearm-related injury deaths
15-4. Proper firearm storage in homes
15-5. Nonfatal firearm-related injuries
15-7. Nonfatal poisoning
15-8. Deaths from poisoning
15-9. Deaths from suffocation
15-10. Emergency department surveillance systems

15-11. Hospital discharge surveillance systems
15-12. Emergency department visits
15-19. Safety belts
15-20. Child restraints
15-23. Bicycle helmet use
15-24. Bicycle helmet laws
15-31. Injury protection in school sports
15-33. Maltreatment and maltreatment fatalities of children
15-38. Physical fighting among adolescents
15-39. Weapon carrying by adolescents on school property
18. Mental Health and Mental Disorders
18-2. Adolescent suicide attempts
18-7. Treatment for children with mental health problems
18-8. Juvenile justice facility screening
18-15. Eating disorder relapses
19. Nutrition and Overweight
19-3. Overweight or obesity in children and adolescents
19-4. Growth retardation in children
19-12. Iron deficiency in young children and in females of childbearing age
19-13. Anemia in low-income pregnant females
19-14. Iron deficiency in pregnant females
19-15. Meals and snacks at school
21. Oral Health
21-1. Dental caries experience
21-2. Untreated dental decay
21-8. Dental sealants
21-9. Community water fluoridation
21-10. Use of oral health care system
21-13. School-based health centers with oral health component
21-14. Health centers with oral health service components
21-15. Referral for cleft lip/palate
21-16. State-based surveillance system
22. Physical Activity and Fitness
22-6. Moderate physical activity in adolescents
22-7. Vigorous physical activity in adolescents
22-8. Physical education requirement in schools
22-9. Daily physical education in schools
22-10. Physical activity in physical education class
22-11. Television viewing
22-12. School physical activity facilities
24. Respiratory Diseases
24-1 Deaths from asthma
24-2 Hospitalizations for asthma
24-3 Hospital emergency department visits for asthma
24-5 School or work days lost
25. Sexually Transmitted Diseases
25-9. Congenital syphilis
25-10. Neonatal STDs
25-11 Responsible adolescent sexual behavior
25-12. Sexual behavior messages on television
25-14. Screening in youth detention facilities and jails
25-17. Screening of pregnant women
26. Substance Abuse
26-6. Adolescents riding with a driver who has been drinking
26-9. Substance-free youth
26-10. Adolescent and adult use of illicit substances
26-14. Steroid use among adolescents
26-15. Inhalant use among adolescents
26-16. Peer disapproval of substance abuse

26-17. Perception of risk associated with substance abuse

27. Tobacco Use

27-2. Adolescent tobacco use
27-3. Initiation of tobacco use
27-4. Age at first use of tobacco
27-6. Smoking cessation during pregnancy
27-7. Smoking cessation by adolescents
27-11. Smoke-free and tobacco-free schools
27-14. Enforcement of illegal tobacco sales to minors laws
27-15. Retail license suspension for sales to minors
27-17. Adolescent disapproval of smoking

28. Vision and Hearing

28-2. Vision screening for children
28-4. Impairment in children and adolescents

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Birth defect: An abnormality in structure, function, or body metabolism that is present at birth, such as cleft lip or palate, phenylketonuria, or sickle cell disease.

Breastfeeding: Exclusive use of human milk or use of human milk with a supplemental bottle of formula. "Exclusive breastfeeding" refers to the use of only human milk, supplemented by solid food when appropriate but not supplemented by formula.

Children with special health care needs: Children who have or are at risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health care and related services of a type or amount beyond that required by children generally.

Congenital anomaly: See birth defect.

Developmental disabilities: A broad spectrum of impairments characterized by developmental delay or limitation or both in personal activity, such as mental retardation, cerebral palsy, epilepsy, hearing and other communication disorders, and vision impairment. The more severe developmental disabilities require special interdisciplinary care.

Fetal alcohol syndrome (FAS): A cluster of structural and functional abnormalities found in infants and children as a result of alcohol consumption by the mother during pregnancy and characterized by growth retardation, facial malformations, and central nervous system dysfunction.

Fetal death: The death of a fetus in utero after 20 weeks or more of gestation. The fetal death rate is the number of fetal deaths in a population divided by the total number of live births and fetal deaths in the same population during the same time period.

Eclampsia/Preeclampsia: A condition that occurs late in pregnancy, characterized by hypertension, edema, and proteinuria. When convulsions and coma are associated, it is called eclampsia.

Ectopic pregnancy: A gestation elsewhere than in the uterus, often occurring in the fallopian tube. An ectopic pregnancy cannot develop normally and causes fainting, abdominal pain, and vaginal bleeding.

Genetic disorders: The group of health conditions that result primarily from alterations in a gene or combination of genes.

Gestational trophoblastic disease: A type of cancer associated with pregnancy in which a grape-like mole develops in the womb.

Hypotonia: A condition of diminished tone of the skeletal muscles, with diminished resistance of muscles to passive stretching.

Infant death: Death of an infant less than 1 year old. Neonatal death is the death of an infant less than 28 days after birth; postneonatal death is the death of an infant between 28 days and 1 year after birth. The infant death rate is the number of deaths of infants less than 1 year old (obtained from death certificates) per 1,000 live births in a population (obtained from birth certificates).

Intrauterine growth retardation (IUGR): The failure of a fetus to maintain its expected growth potential at any stage of gestation. Infants with IUGR may be born at full term but are smaller than expected.

Intrapartum period: Period extending from the onset of labor through the completion of delivery.

Level III hospital: A facility for high-risk deliveries and neonates that can provide care to very small infants, including mechanical ventilation and neonatal surgery and special care for transferred patients and for which a full-time neonatologist serves as the director.

Live birth: The complete expulsion or extraction from its mother of an infant, irrespective of the duration of pregnancy, which after such separation, breathes or shows any other evidence of life, such as the beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each infant from such a birth is considered live born.

Low birth weight (LBW): Weight at birth of less than 2,500 grams (about 5.5 pounds).

Maternal death: Death of a woman while pregnant or within 42 days of the end of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. The maternal death rate (also referred to as the maternal mortality ratio) represents the number of maternal deaths for every 100,000 live births.

Medical home: Medical care for infants and children that is accessible, continuous, comprehensive, family-centered, coordinated, and compassionate.

Neonatal period: The first 28 days of life.

Neural tube defects (NTDs): A set of birth defects that result from failure of the neural tube to close in utero. Two of the most common NTDs are anencephaly (absence of the majority of the brain) and spina bifida (incomplete development of the back and spine).

Occurrence: As the term is used in this chapter, occurrence is the incidence of new cases among livebirths per year that are caused primarily by prenatal factors. In the spina bifida and other neural tube defects objective, identification is in the first year of life, and occurrence is reported as the number of cases per 10,000 livebirths per year. In the fetal alcohol syndrome objective, some children who have the condition at birth are not identified until age 4 or 5 years; occurrence is reported as a number per 10,000 live births. In the developmental disabilities objective, children with specified conditions such as mental retardation are not always identified until about age 7 or 8 years even though the conditions are usually caused by prenatal events; occurrence in these objectives is reported as a number per 10,000 children aged 8 years.

Perinatal death: Includes fetal deaths after 28 weeks of gestation and infant deaths within the first 7 days of birth. This definition represents the standard definition promoted by the World Health Organization and is therefore useful for international comparisons.

Postneonatal period: The period from an infant's 29th day of life until the first birthday.

Postpartum period: The 6-week period immediately following birth.

Preeclampsia: (see eclampsia)

Prenatal care: Pregnancy-related health care services provided to a woman between conception and delivery. The American College of Obstetricians and Gynecologists recommends at least 13 prenatal visits in a normal 9-month pregnancy: one each month for the first 28 weeks of pregnancy, one every 2 weeks until 36 weeks, and then weekly until birth.

Preterm birth: Birth occurring before 37 weeks of pregnancy.

Sudden infant death syndrome (SIDS): Sudden, unexplained death of an infant from an unknown cause.

Surfactant: A surface-active agent that prevents the lungs from filling with water by capillary action.

Synthetic surfactant: An artificial substance that prevents a newborn's lungs from filling with water.

Teratogenic: Causing malformations of an embryo or fetus.

Very low birth weight (VLBW): Weight at birth of less than 1,500 grams (about 3.3 pounds).

References

1. National Center for Health Statistics. *Health, United States 1999*. Hyattsville, MD: U.S. Department of Health and Human Services, 1999.

2. Ventura, S.J.; Anderson, R.N.; Martin, J.A.; and Smith, B.L. Births and Deaths: Preliminary Data for 1997. *National Vital Statistics Report*. 47(4):1-42.

3. Hoyert, D.L. Medical and life-style risk factors affecting fetal mortality, 1989-90. *Vital and Health Statistics 20 Data National Vital Statistics System* 31:1-32, 1996.

4. Ventura S.J.; Martin, J.A.; Curtin, S.C.; and Mathews, T.J. Births: Final Data for 1997. *National Vital Statistics Reports*, 45(18), 1999.

5. Lewit, E.M.; Baker, L.S.; Hope, C.; and Shiono, P.H. The direct cost of low birth weight. *Future Child* 5(1):35-56, 1995.

6. Camas, O.R.; Cheung, L.W.Y.; and Lieberman, E. The Role of Lifestyle in Preventing Low Birth Weight. *Future Child*. 5(1):121-138, 1995.

7. Stratton, K.; Howe, C.; Battaglia, F., eds. *Fetal Alcohol Syndrome: Diagnosis, Epidemiology, Prevention, and Treatment*. Washington, DC: National Academy Press, 1996.

8. Chasnoff, I.J.; Burns, W.J.; Schnoll, S.H.; and Burns, K.A. Cocaine use in pregnancy. *New England of Journal Medicine* 313:666-669, 1985.

9. CDC. Morbidity and Mortality Weekly Reports 45(44):1048-50.

10. American Academy of Pediatrics Work Group on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics* 100(6):1035-1039, 1997.

11. American Academy of Pediatrics, Committee on Pediatric AIDS. Human milk, breastfeeding, and transmission of human immunodeficiency virus in the United States. *Pediatrics* 96:977-979, 1995.

12. Mothers' Survey, Ross Products Division, Abbott Laboratories, Inc. 1998.

13. Hogan, D.P.; Msall, M.E.; Rogers, M.L.; and Avery, R.C. Improved disability population estimates of functional limitation among children aged 5-17. *Maternal and Child Health Journal* 1(4):203-216, 1997.

14. LaPlante, M.P., and Carlson, D. Disability in the United States: Prevalence and causes, 1992. *Disability Statistics Report*. Washington, DC: US DOE, 1996.

15. Hoyert, D.L., Kockanck, K.D., and Murph, S.L. Deaths final data. National Vital Statistics Reports 47(19), 1999.

16. Centers for Disease Control and Prevention (CDC). Ectopic pregnancy in the United States, 1990-92. *Morbidity and Mortality Weekly Report* 44(3), 1995.

17. CDC. Differences in maternal mortality among black and white women, United States. *Morbidity and Mortality Weekly Report* 44(2), 1995.

18. Birth Defects Monitoring Program. CDC, NCHS, as reported in Healthy People 2000 Review 1997.

19. Howie, P.W.; Forsyth, J.S.; Ogston, S.A.; et al. Protective effect of breast feeding against infection. *British Medical Journal* 300:11-16, 1990.

20. Kovar, M.G.; Serdula, M.K.; Marks, J.S.; et al. Review of the epidemiologic evidence for an association between infant feeding and infant health. *Pediatrics* 74:S615-S638, 1984.

21. Popkin, B.M.; Adair, L.; Akin, J.S.; et al. Breast-feeding and diarrheal morbidity. *Pediatrics* 86:874-882, 1990.

22. Beaudry, M.; Dufour, R.; and Marcoux, S. Relation between infant feeding and infections during the first 6 months of life. *Journal of Pediatrics* 126:191-197, 1995.

23. Frank, A.L.; Taber, L.H.; Glezen, W.P.; et al. Breast-feeding and respiratory virus infection. *Pediatrics* 70:239-245, 1982.

24. Wright, A.L.; Holberg, C.J.; Taussig L.M.; et al. Relationship of infant feeding to recurrent wheezing at age 6 years. *Archives of Pediatric and Adolescent Medicine* 149:758-763, 1995.

25. Saarinen, U.M. Prolonged breast feeding as prophylaxis for recurrent otitis media. *Acta Paediatric Scandinavica* 71:567-571, 1982.

26. Duncan, B.; Ey, J.; Holberg, C.J.; et al. Exclusive breast-feeding for at least 4 months protects against otitis media. *Pediatrics* 91:867-872, 1993.

27. Montgomery, D., and Splett, P. Economic benefit of breast-feeding infants enrolled in WIC. *Journal of the American Dietetic Association* 97:379-385, 1997.

28. Tuttle, C.R., and Dewey, K.G. Potential cost savings for Medi-Cal, AFDC, food stamps, and WIC programs associated with increasing

breast-feeding among low-income Hmong women in California. *Journal of the American Dietetic Association* 6:885-890, 1996.

29. Chua, S.; Arulkumaran, S.; Lim, I.; et al. Influence of breastfeeding and nipple stimulation on postpartum uterine activity. *British Journal of Obstetrics and Gynecology* 101:804-805, 1994.

30. Dewey, K.G.; Heinig, M.J.; and Nommsen, L.A. Maternal weight-loss patterns during prolonged lactation. *American Journal of Clinical Nutrition* 58:162-166, 1993.

31. Newcomb, P.A.; Storer, B.E.; Longnecker, M.P.; et al. Lactation and a reduced risk of premenopausal breast cancer. *New England Journal of Medicine* 330:81-87, 1994.

32. Melton, L.J.; Bryant, S.C.; Wahner, H.W.; et al. Influence of breastfeeding and other reproductive factors on bone mass later in life. *Osteoporosis International* 3:76-83, 1993.

33. Willinger, M.; Hoffman, H.J.; and Hartford, R.B. Infant sleep position and risk for sudden infant death syndrome: Report of meeting held January 13 and 14, 1994, National Institutes of Health, Bethesda, MD. *Pediatrics* 93(5):814-819, 1993.

34. Palta, M.; Weinstein, M.R.; McGuinness, G.; et al. A population study. Mortality and morbidity after availability of surfactant therapy. Newborn Lung Project. *Archives of Pediatric and Adolescent Medicine*

148(12):1295-1301, 1994.

35. Schoendorf, K.C., and Kiely, J.L. Birth weight and age-specific analysis of the 1990 U.S. infant mortality drop. Was it surfactant? *Archives of Pediatric and Adolescent Medicine* 151(2):129-134, 1997.

36. CDC. Morbidity and Mortality Weekly Reports 9, 1998.

37. Grad, R., and Hill, I.T. Financing maternal and child health care in the United States. In: Blakely, C.; Brown, S.; Kotch, J.B.; et al., (eds.). *A Pound of Prevention: The Case for Universal Maternity Care in the U.S.* Washington, DC: American Public Health Association, 1992.

38. American College of Obstetricians and Gynecologists. *Manual of Standards in Obstetric-Gynecologic Practice.* 2nd ed. Chicago: The College, 1965.

39. Kotelchuck, M. An evaluation of the Kessner Adequacy of Prenatal Care Index and a proposed Adequacy of Prenatal Care Utilization Index. *American Journal of Public Health* 84:1414-1420, 1994.

40. Expert Panel on the Content of Prenatal Care. *Caring for Our Future: The Content of Prenatal Care.* Washington, DC: U.S. Public Health Service, 1989.

41. Charles, A.G.; Norr, K.L.; Block, C.R.; Meyering, S.; and Meyers, E. Obstetric and psychological effects of psychoprophylactic preparation for childbirth. *American Journal of Obstetrics and Gynecology* 1978;131(1):44-52.

42. Genest, M. Preparation for childbirth, evidence for efficacy. A review. *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 10(2):82-85, 1981.

43. Powell, S.L.; Holt, V.L.; Hickok, D.E.; Easterling, T.; and Connell, F.A. Recent changes in delivery site of low-birth-weight infants in Washington: Impact on birth weight-specific mortality. *American Journal of Obstetrics and Gynecology* 173(5):1585-1592, 1995.

44. Kirby, R.S. Perinatal mortality: The role of hospital of birth. *Journal of Perinatology* 16(1):43-49, 1996.

45. Paneth, N.; Kiely, J.L.; Wallenstein, S.; and Susser, M. The choice of place of delivery: Effect of hospital level on mortality in all singleton births in New York City. *American Journal of Disabilities in Children* 141(1):60-64, 1987.

46. McCormick, M.C., and Richardson, D.K. Access to neonatal intensive care. *Future Child* 5(1):162-175, 1995.

47. Curtin, S.C. Rates of cesarean birth and vaginal birth after previous cesarean, 1991-95. *Monthly Vital Statistics Report* 45(11), suppl.3, 1997.

48. Main, E.K. Reducing cesarean birth rates with data-driven quality improvement activities. *Pediatrics* 103:374-383, 1999.

49. American College for Obstetricians and Gynecologists Task Force on Cesarean Delivery. *Considerations in Evaluating the Incidence of Cesarean Delivery.* Washington DC: the College. In press.

50. Philip, A.G. Neonatal mortality rate: Is further improvement possible? *Journal of Pediatrics* 126(3):427-433, 1995.

51. Hack, M.; Klein, N.K.; and Taylor, H.G. Long-term developmental outcomes of low birth weight infants. *Future Child* 5(1):176-196, 1995.

52. Schendel, D.E.; Stockbauer, J.W.; Hoffman, H.J.; et al. Relation between very low birth weight and developmental delay among preschool children without disabilities. *American Journal of Epidemiology* 146(9):740-749, 1997.

53. Kramer, W.B.; Saade, G.R.; Goodrum, L.; et al. Neonatal outcome after active perinatal management of the very premature infant between 23 and 27 weeks gestation. *Journal of Perinatology* 17(6):439-443, 1997.

54. Lefebvre, F.; Glorieux, J.; and St-Laurent-Gagnon, T. Neonatal survival and disability rate at age 18 months for infants born between 23 and 28 weeks of gestation. *American Journal of Obstetrics and Gynecology* 174(3):833-838, 1996.

55. Adams, M.M.; Sarno, A.P.; Harlass, F.E.; et al. Risk factors for preterm delivery in a healthy cohort. *Epidemiology* 6(5):525-532, 1995.

56. Harlow, B.L.; Frigoletto, F.D.; Cramer, D.W.; et al. Determinants of preterm delivery in low-risk pregnancies. The RADIUS Study Group. *Journal of Clinical Epidemiology* 49(4):441-448, 1996.

57. Virji, S.K., and Cottington, E. Risk factors associated with preterm deliveries among racial groups in a national sample of married mothers. *American Journal of Perinatology* 8(5):347-353, 1991.

58. Lundsberg, L.S.; Bracken, M.B.; and Saftlas A.F. Low-to-moderate gestational alcohol use and intrauterine growth retardation, low birthweight, and preterm delivery. *Annals of Epidemiology* 7(7):498-508, 1997.

59. Goldenberg, R.L. Prenatal care and pregnancy outcome. In: Kotch, J.B. Blakely, C.H., Brown, S.B.; et al., (eds.). *A Pound of Prevention: The Case for Universal Maternity Care in the U.S.* Washington, DC: American Public Health Association, 1992.

60. Carmichael, S.; Abrams, B.; and Selvin, S. The association of pattern of maternal weight gain with length of gestation and risk of spontaneous preterm delivery. *Paediatric Perinatology and Epidemiology* 11(4):392-406, 1997.

61. Goldenberg, R.L.; Andrews, W.W.; Yuan, A.C.; MacKay, H.T.; et al. Sexually transmitted diseases and adverse outcomes of pregnancy. *Clinics in Perinatology* 24(1):23-41, 1997.

62. Hillier, S.; Nugent, R.; Eschenbach, D.; Krohn, M; Gibbs, R.; Martin, D.; et al. Association between bacterial vaginosis and preterm delivery of low-birth-weight infant. New England Journal of Medicine 333:1737-1742, 1995.

63. Meis, P.H.; Goldenberg, R.L.; Mercer, G.; et al. The preterm prediction study: Significance of vaginal infections. *American Journal of Obstetrics and Gynecology* 173(4):1231-1235, 1995.

64. Dewey, K.G.; Heinig, M.J.; and Nommsen-Rivers, L.A. Differences in morbidity between breast-fed and formula-fed infants. *Pediatrics* 126:696-702, 1995.

65. Copper, R.L.; Goldenberg, R.L.; Das, A.; et al. The preterm prediction study: Maternal stress is associated with spontaneous preterm birth at less than 35 weeks gestation. National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. *American Journal of Obstetrics and Gynecology* 175(5):1286-1292, 1996.

66. Rawlings, J.S.; Rawlings, V.B.; and Read, J.A. Prevalence of low birth weight and preterm delivery in relation to the interval between pregnancies among white and black women. *New England Journal of Medicine* 332(2):69-74, 1995.

67. Orr, S.T.; James, S.A.; Miller, C.A.; et al. Psychosocial stressors and low birthweight in an urban population. *American Journal of Preventive Medicine* 12(6):459-466, 1996.

68. Institute of Medicine, National Academy of Sciences, Subcommittee on Nutritional Status and Weight Gain During Pregnancy. *Nutrition During Pregnancy*. Washington, DC: National Academy Press, 1990.

69. Hickey, C.A.; Cliver, S.P.; McNeal, S.F., et al. Prenatal weight gain patterns and birth weight among nonobese black and white women. *Obstetrics and Gynecolology* 88(4, pt.1):490-496, 1996.

70. Siega-Riz, A.M.; Adair, L.S.; and Hobel, C.J. Institute of Medicine maternal weight gain recommendations and pregnancy outcome in a predominantly Hispanic population. *Obstetrics and Gynecology* 84(4):565-573, 1994.

71. National Maternal and Infant Health Survey. CDC, NCHS, cited in Healthy People 2000 Review, 1997.

72. Willinger, M.; Hoffman, H.J.; Wu, K.T.; Hou, J.R.; Kessler, R.C.; Ward, S.L.; Keens, T.G.; and Corwin, M.J. Factors associated with the transition to non-prone sleep positions of infants in the United States. The National Infant Sleep Position Study. *Journal of the American Medical Association* 280:329-335, 1998.

73. Oyen, N.; Markestad, T.; Skjærven, R.; et al. Combined effects of sleeping position and prenatal risk factors in sudden infant death syndrome: The Nordic epidemiological SIDS study. *Pediatrics* 100(4):613-621, 1997.

74. Martin, R.J.; DiFiore, J.M.; Korenke, C.B.; et al. Vulnerability of respiratory control in healthy preterm infants placed supine. *Journal of Pediatrics* 127(4):609-614, 1995.

75. Rayburn, W.F.; Stanley, J.R.; and Garrett, M.E. Periconceptional folate intake and neural tube defects. *Journal of the American College of Nutrition* 15(2):121-125, 1996.

76. CDC. Use of folic acid for prevention of spina bifida and other neural tube defects. 1983-1991. *Morbidity and Mortality Weekly Report* 40:513-516, 1991

77. Standing Committee on Scientific Evaluation of Dietary Reference. Intakes, Institutes of Medicine. Dietary Reference Intakes for Thiamine, Riboflavin, Niacin, Vitamin B-6, Folate, Vitamin B-12, Pantothenic Acid, Biotin, and Choline. Washington, DC: National Academy Press 1998.

78. Zuckerman, B. Marijuana and cigarette smoking during pregnancy: neonatal effects. In: Chasnoff, I. (ed.). *Drugs, Alcohol, Pregnancy, and Parenting*. Boston: Kluwer Academic Publishers, 1998.

79. Jones K.L. Fetal alcohol syndrome. Pediatric Review 8:122-126, 1986.

80. Lundsberg, L.S.; Bracken, M.B.; and Saftlas, A.F. Low-to-moderate gestational alcohol use and intrauterine growth retardation, low birth weight, and preterm delivery. *Annals of Epidemiology* 7(7):498-508, 1997.

81. American Academy of Pediatrics Committee on Substance Abuse. Drug-Exposed Infants. *Pediatrics* 96(2):364-367, 1995.

82. Chasnoff, I.J., Griffith, D.R., Mac Gregor, S.; et al. Temporal patterns of cocaine use in pregnancy: perinatal outcome. *Journal of the American Medical Association* 261:1741-1744, 1989.

83. Bigol, N.; Fuchs, M.; Diaz, V.; Stone, R.K.; Gromisch, D.S. Teratogenicity of cocaine in humans. *Journal of Pediatrics* 110:93-96, 1987.

84. Streissguth, A.P. The behavioral teratology of alcohol: performance, behavioral, and intellectual deficits in prenatally exposed children. In: West, J.R. (ed.). *Alcohol and Brain Development*. New York: Oxford University Press, 1986, 3-44.

85. Weiner, L., and Morse, B.A. FAS: Clinical perspectives and prevention. In: Chasnoff, I.J. (ed.). *Drugs, Alcohol, Pregnancy, and Parenting*. Boston: Kluwer Academic Publishers, 1988, 127-148.

86. American Academy of Pediatrics Committee on Substance Abuse and Committee on Children with Disabilities. Fetal Alcohol Syndrome and Fetal Alcohol Effects. *Pediatrics* 1993; 91(5):1004-1006.

87. American College of Obstetricians and Gynecologists. Technical bulletin No. 195: Substance abuse in pregnancy. Washington, DC: The College, 1994.

88. American Academy of Pediatrics, Committee on Drugs. The transfer of drugs and other chemicals into human milk. *Pediatrics* 93:137-150, 1994.

89. Newborn Screening Committee, The Council of Regional Networks for Genetic Services (CORN), *National Newborn Screening Report-1993*, CORN, Atlanta, GA, January 1998.

90. The Council of Regional Networks for Genetic Services (CORN), Newborn Screening Committee. *National Newborn Screening Report-1993*, Atlanta, GA: the Council, January 1998.

91. American Academy of Pediatrics Committee on Genetics. 1989 newborn screening fact sheets. *Pediatrics* 83(3):449-464, 1989.

92. American Academy of Pediatrics Committee on Genetics. Issues in newborn screening. *Pediatrics* 89(2):345-349, 1992.

93. American Academy of Pediatrics Section on Endocrinology and Committee on Genetics and American Thyroid Committee on Public Health. Newborn screening for congenital hypothyroidism: Recommended guidelines. *Pediatrics* 91(6):1203-1209, 1993.

94. CORN, Newborn Screening Committee. Guidelines For The Newborn Screening System: Follow-Up Of Children, Diagnosis, Management, and Evaluation. Atlanta, GA: the Council, 1999.

95. Gaston, M.H.; Verter, J.I.; Woods, G.; et al. Prophylaxis with oral penicillin in children with sickle cell anemia: a randomized trial. *New England Journal of Medicine* 314:1593-1599, 1986.

96. Davis, H.; Schoendorf, K.C.; Gergen, P.J.; and Moore, Jr., R.M. National trends in the mortality of children with sickle cell disease, 1968 through 1992. *American Journal of Public Health* 87:1317-1322, 1997.

97. CDC. Mortality among children with sickle cell disease identified by newborn screening during 1990-1994—California, Illinois, and New York. *Morbidity and Mortality Weekly Report* 47:169-172, 1998.

98. American Academy of Pediatrics, Ad Hoc Task Force on Definition of the Medical Home. The medical home. *Pediatrics* 90(5):774, 1992.

99. Sia, C.J., and Peter, M.I. The medical home comes of

age. *Hawaii Medical Journal* 47(9):409-410, 1988.

100. American Academy of Pediatrics Committee on Child Health Financing. Managed care and children with special health care needs: Creating a medical home. Elk Grove Village, IL: AAP, 1998.

101. American Academy of Pediatrics. The medical home and early intervention: linking services for children with special needs. Elk Grove Village, IL: AAP, 1999.

102. Brewer, Jr., E.J.; Stewart, J.; McPherson, M.; Magrab, P.; and Hutchins, V. Family-centered, community-based, coordinated care for children with special health care needs. *Pediatrics* 83(6):1055-1060, 1989.

103. McPherson, M.; Arango, P.; Fox, H.; Lauver, C.; McManus, M.; Newachek, P.W.; Perrin, J.M.; Shonkoff, J.P.; and Strickland, B. A new definition of children with special health care needs. *Pediatrics* 102(1):137-139, 1998.

104. American Academy of Pediatrics. Managed care and children with special health care needs. 1997.

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Medical Product Safety

Lead Agency: Food and Drug Administration

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Goal

Ensure the safe and effective use of medical products.

Overview

Medical products—which include drugs, biological products, and medical devices—provide great public benefit. Although marketed medical products are required to be safe, this does not mean they have zero risk. A safe product has reasonable risks, given the magnitude of the benefit expected from the product and the alternatives to its use. Thus the choice to use a medical product involves balancing its benefits with the potential risks of using it. The comparative evaluation—which involves weighing the benefits (positive effects) and risks (potential harm) of various medical options for treatment, prophylaxis, prevention, or diagnosis—is an essential part of determining product safety. Evaluation is done during research and development on new medical products or procedures (such as surgery) or by a regulatory authority deliberating the approval or withdrawal of a product or some intermediate action, by a physician on behalf of a patient or by the patient. Such weighing, whether implicit or explicit, is at the heart of decisionmaking in medicine and health care.

The United States has an elaborate system to maintain this benefit-risk balance by making sure that products are developed, tested, manufactured, labeled, prescribed, dispensed, and used in a way that maximizes benefit and minimizes risk. This complex system involves several key players: manufacturers that develop and test medical products and submit applications for marketing approval to the Food and Drug Administration (FDA); FDA, which has an extensive premarketing review and approval process and uses a series of postmarketing programs to gather data on and assess risks; the health care delivery system; and patients, who rely on the health care system and providers to provide them with needed interventions while protecting them from injury. Regrettably, however, this elaborate benefit-risk system and its subsystems lack the integration needed to ensure optimal public health and safety.

Sources of risk. It is widely accepted that enormous benefits can be gained from using medical products. Yet while most are well tolerated, producing only minimal side effects or a low rate of adverse events, some products can be very toxic, producing a high rate of complications from side effects. It is estimated that millions of adverse events associated with the use of medical products occur each year; many of these are serious and may result in death.[1]

Federal oversight of a medical product's benefits versus risks continues well beyond the initial marketing of a product. Once a medical product is approved for marketing, the safety of the product continues to be monitored by FDA, which

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collects and analyzes reports of product experience. As more products are approved for marketing, postmarketing surveillance becomes increasingly important. Through a program called MEDWATCH, FDA's Medical Products Reporting Program and Safety Information, health care professionals, patients, and consumers can report serious adverse events and problems associated with medical products to FDA, the manufacturer, or both. MEDWATCH also accepts reports of medication errors or potential errors. Partners include health professionals, consumers, and other appropriate health-related organizations or commercial interests that actively disseminate information on the critical importance of monitoring and reporting serious adverse events and product problems, along with information on how to report directly to the FDA. These partners also provide a 'multiplier effect,' in which MEDWATCH partners rapidly disseminate new FDA-related product safety information back to their membership.

The growing complexity of medical technology, coupled with economic pressures and organizational change within health care institutions, increases the potential for unanticipated and unintended consequences in using medical devices. These changes demand that postmarket surveillance move from passive surveillance to a proactive strategy that includes understanding how organizations encounter medical devices, how problems are perceived and reported, and which characteristics of the health care system contribute to a given event. A safer patient environment can be created if increased efforts are made to identify product failures and errors before patients are injured.

Beyond the individual level of risk management (for example, patients and health care providers), managing risk must be targeted at the organization level. For example, user facilities such as hospitals, long-term care facilities, ambulatory surgical, outpatient treatment, and outpatient diagnostic centers, are required to report errors related to medical devices. By law, these facilities are required to report any death to FDA and to the manufacturer of the device within 10 working days. Any serious illness or injury also must be reported by the user facility to the manufacturer within 10 working days or, if the manufacturer is unknown, the report should be sent to FDA. Further, FDA encourages user facilities to report product or device malfunctions (for example, intravenous catheter defects) that do not result in death or serious injury directly to the manufacturer.

Efforts to manage risk at the community, national, and global levels present the most difficult public health challenges. The introduction of hepatitis B surface antigen screening and the change to an all-volunteer blood donor population in the mid-1970s resulted in substantial reductions in transfusion-transmitted viral hepatitis. This success, however, was overshadowed by the unexpected emergence of a new blood-borne pathogen, human immunodeficiency virus (HIV). Since its initial recognition in the early 1980s, more than 8,000 persons have been diagnosed with transfusion-associated acquired immunodeficiency syndrome (AIDS), and approximately half of the United States hemophiliac population has been infected with HIV. The HIV epidemic remains a potent reminder of the Nation's vulnerability to emerging agents and the tragic repercussions they can exact on those who depend on life-saving blood and blood products.

FDA takes primary responsibility for ensuring blood safety and has taken the lead in recent efforts. Today, improvements in donor screening, serologic testing, and viral inactivation procedures have made the U.S. blood supply one of the safest in the world. Nevertheless, many additional steps can be implemented by FDA, industry, consumers, and blood donor volunteers to go further. Since 1998, the Department of Health and Human Services has coordinated the efforts of the Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), and FDA, with cooperation from other government agencies, in a Blood Action Plan. Consumer and donor confidence are important factors in maintaining a safe blood supply and Healthy People 2010 objectives reflect those concerns and incorporate a science-based approach to expanding the blood supply and enhancing its safety.

Management of medical product risk. In general, the sources of medical product risks can be thought of as falling into four categories: (1) product defects; (2) known side effects, both avoidable and unavoidable; (3) medication or device errors; and (4) remaining uncertainties.[2] Because each type of risk has a different source, effective management of each is likely to be different.

Product defects. Historically, product defects have been an important source of medical product-associated injuries. In the case of pharmaceuticals, product defects usually include the lack of potency and the lack of purity of drugs. A significant portion of resources is currently devoted to regulating product quality. Research, surveillance, quality systems also called *current good manufacturing practices*, and inspections form the cornerstone of FDA efforts to minimize product defects.

Known side effects. When using a drug or other medical product, a patient runs the risk of experiencing reactions resulting from the product's interaction with the body. For pharmaceuticals, these reactions are commonly termed *side effects*. They are usually identified in a product's package insert as possible risks. Known side effects are the source of the majority of injuries and deaths resulting from product use.

Some known side effects are often predictable and avoidable. To avoid them, the health care practitioner must select the best treatment and plan appropriate measures to manage the risks. For example, when prescribing certain prescription medications that are renal toxic (toxic to the kidneys), practitioners need to ensure that their patients are well hydrated or calculate dose adjustments to reduce the risk of toxicity or kidney failure. A medical practitioner can choose the wrong therapy for a specific condition (for example, using antibiotics for viral infections). Alternatively, a practitioner may prescribe the appropriate therapy but fail to individualize the therapy or monitor the patient for signs of toxicity. Examples of avoidable side effects include the consequences of known drug-drug interactions or prescribing an inappropriate dosage for elderly persons.

In many cases, known side effects are unavoidable because they can occur even if a product is used appropriately. Although estimates vary, the overall human and economic costs of unavoidable side effects are high.[3] The risk of experiencing such side effects is the inevitable price of the benefits of treatment. Examples of common, predictable, usually unavoidable side effects include superinfection following antimicrobial chemotherapy, fatigue and depression from interferon use, and bone marrow suppression from chemotherapy. For the successful management of these risks, both the practitioner and patient must be fully aware of the risks involved in treatment, agree to the treatment, and provide careful patient monitoring to detect early symptoms of known side effects.

Medication or device errors. A medication or device error involves the incorrect use of a prescribed product or incorrect operation or placement of a medical device. Errors also involve unintended substitution of the wrong product for the prescribed product. Errors can occur for example, when a confusing product name results in the wrong product being dispensed, or when inattention results in an overdose of an intended drug. Substantial numbers of injuries and deaths occur annually because of medication or device errors.[4] In general, medication and device errors are believed to result from problems intrinsic to the health care system. That is, these errors often are the result of a sequence of errors within the health care system. For example, a physician's poor handwriting on the prescription pad and unclear or confusing prescription drug labeling result in pharmacists' misreading prescriptions and labeling and filling prescriptions with the wrong medications. Such errors are not totally preventable, but they can be minimized through enhancements aimed at integrating the overall health care system.

Remaining uncertainties. Given current scientific and medical knowledge, it is not possible to learn everything about the effects of a medical product. For example, new information about long-marketed products may become available. Therefore, a degree of uncertainty always exists about both the benefits and risks of medical products, including unexpected side effects, long-term effects, effects of off-label use, and effects in populations not studied before marketing.

Managing risk and medical product safety is a matter of continuously developing information. A comprehensive risk management system requires risk communication. Thus, effective risk communication demands that risk information be translated into words and formats that are readily understood by practitioners, caregivers, and patients. For example, U.S. Pharmacopeia (USP) and FDA have adopted the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) Taxonomy for Medication Errors in order to report, track, and benchmark medication error data in a standardized format for hospitals nationwide. In this risk communication strategy, FDA and USP are expected to provide a nationally projected measure of errors grouped according to categories established by the NCC MERP.

Because national data systems will not be available in the first half of the decade for tracking progress, three subjects of interest are not addressed in the Healthy People 2010 Medical Product Safety objectives. Representing a research and data collection agenda for the coming decade, the topics are related to the record practices of health care professionals, plasma manufacturing, and data analysis. The first topic covers health care professionals who record their patient's use of botanicals, dietary supplements, and other alternative products to identify the risks of using these products in combination with conventional drugs and biologics. The second topic addresses the development and application of effective methods for complete inactivation or removal of pathogens from plasma, blood, and blood products. The third involves the proportion of new medical products that have had pre- and postmarketing clinical data analyzed for gender differences.

Disparities

Certain groups are particularly vulnerable to poor health outcomes because they are exposed to both socioeconomic and age-related physiological stress factors that interact synergistically. People aged 65 years and older, for example, take the greatest number and quantity of medications.[5] Of elderly patients taking three or more prescription drugs for chronic conditions, more than one-third are rehospitalized within 6 months of discharge from a hospital, with 20 percent of those readmissions due to drug problems.[6] Twenty-eight percent of hospitalizations of older people are due to noncompliance with drug therapy and adverse events.[7] Adverse drug events rank fifth among the top preventable threats to the health of older people in the United States, after congestive heart failure, breast cancer, hypertension, and pneumonia.[8] Moreover, 32,000 adults aged 65 years and older suffer hip fractures each year as a result of falls associated with the use of psychotropic drugs, which are used to treat the patients' underlying medical condition.[9] Moreover, growth in these numbers is expected, given the increasing number and potency of drug products being marketed and the increasing percentage of the population that is elderly.

Data collection systems do not exist that would allow analysis of disparities in adverse events among different population groups. Because there is a need to look at select populations, which are diverse in race, ethnicity, socioeconomic status, and area of residence, it is likely that data will be needed from many provider organizations.

Another example of a common variable that predisposes individuals to vulnerability and poor health outcomes is literacy. Literacy disparities are of concern because low-literacy patients cannot be "empowered" consumers.[10] Further, patients who do not understand health professionals' instructions will not receive good-quality care. Finally, because health literacy problems are concentrated in populations that depend on public programs for their medical care, an education effort may be required to inform public assistance patients about how to understand the proper use of their medicines. To reach all people effectively, information must be provided in a variety of formats and reading levels. (See Focus Area 7.

Educational and Community-Based Programs and Focus Area 11. Health Communication.)

Opportunities

Although medical products provide benefits, they also can cause injury and harm. FDA and other participants act in ways to maximize the benefits and minimize the risks associated with using medical products. Often, these actions are insufficiently integrated. A common goal of maximizing benefits and minimizing risks could be greatly advanced if the participants work together within an integrated framework. An integrated benefit-risk management framework, if adopted, would contribute to improving risk communication and risk confrontation.

Risk communication. The health care industry has experienced tremendous growth and demand in building an infrastructure driven by technology. For example, elaborate information technology (IT) software programs, which link to huge databases, allow access to a vast amount of valuable information for pharmacists and other health care professionals, health care organizations, and consumers. The information in these systems is used to improve patient care, design better health care methods, improve operations, and enhance organizational planning. Many groups benefit from sharing information between different components of health care, including patients, providers, insurance companies, medical equipment companies, pharmaceutical companies, hospitals, and data processing and health research corporations. Technology is available to integrate the different components of health care, but its use today is minimal except in select health care settings. Therefore, it would be advantageous to encourage upgrades to present technology systems and links to other integrated technology systems to improve patient care, always keeping in mind, of course, patient confidentiality.

Evolving automation offers the possibility of placing the entire patient record into an electronic format. Electronic formats offer the possibility of automatically and instantaneously checking any new therapy for incompatibilities with the products, appropriate indications and dosing range, and the patient's current therapies and contraindications (for example, allergies or reduced hepatic or renal function). Electronic formats also offer the possibility of looking at diagnoses and seeing whether patients (or in cases of children, their parents) have been exposed to existing therapies in the past.

Further, as IT systems become more advanced and sophisticated, there is a growing need to ensure and protect patient confidentiality. Health plans, providers, and pharmacy benefit managers have long recognized the importance of maintaining the confidentiality of patient-identifiable medical information. There is a vast potential for information sharing between different components of health care if the confidentiality issues can be overcome. Legislation to protect patients from the inappropriate disclosure of their medical information will be essential to the development of systems that are designed to protect their health and welfare.

One final consideration for effective risk communication is to provide information about medical products that is useful for patients, consumers, and practitioners. (See Focus Area 11. Health Communication.) Effective risk communication requires information presented in words and formats readily understood by practitioners, caregivers, and patients. This information must be disseminated in a timely fashion and incorporated into clinical practice that is aimed at altering behaviors. Since March 1999, Federal regulations have required over-the-counter (OTC) drug manufacturers to follow a specific format for the labeling of OTC drugs.[11] The format is intended to assist consumers in reading and understanding OTC drug product labeling so that they can use these products safely and effectively.

Risk confrontation. Determining the acceptable level of risk should occur in a larger context.[12] This activity is characterized as risk confrontation: community-based problem solving that actively involves stakeholders in the decisionmaking process.[13] This definition implies that social and community values are at least as important as the technical judgments of professionals and should be included in the determination of acceptable risk.

Science provides only a statistical assessment of risk; it cannot determine its acceptability. Affected communities may differ from regulatory agencies in how they value either risks or benefits. They also may judge differently the amount of uncertainty that is tolerable. Advocacy groups for patients with various diseases, most notably AIDS and cancer, have shown over the past several years that it is impossible to accurately assess the acceptability of risks in light of the potential benefits without the input of the affected community. Although some advocates for patients with life-threatening illnesses are willing to accept a high degree of risk to gain the benefits of new products, other advocacy groups, such as those against mandatory vaccination, feel that no risk is acceptable.

To obtain community input, FDA has engaged in multiple outreach efforts with external stakeholders, soliciting their ideas, opinions, and concerns regarding the safe use of medical products. In the context of determining risk, for example, fostering open public discussions is critical to enhancing participants' practical understanding and illuminating practice choices in the risk decision process. A carefully prepared summary of scientific information will not give participants in the risk decision the understanding they need if that information is not relevant to the decision to be made. It is not sufficient to get the science right; an informed decision also requires getting the right science, that is, directing the scientific effort to the issues most pertinent to the decision.

Interim Progress Toward Year 2000 Objectives

The Healthy People 2000 objective on linked computer systems has been met. In 1995, 98 percent of pharmacies were using computers. Data for providers who review medications for older patients and for the proportion of patients who receive verbal and written information for new prescriptions from prescribers and dispensers show progress. The proportion of adverse event drug reports voluntarily sent to FDA that are regarded as serious has declined slightly and is moving away from the target.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Healthy People 2010—Summary of Objectives

Medical Product Safety

Goal: Ensure the safe and effective use of medical products.

Number	Objective
17-1	Monitoring of adverse medical events
17-2	Linked, automated information systems
17-3	Provider review of medications taken by patients
17-4	Receipt of useful information from pharmacies
17-5	Receipt of oral counseling from prescribers and dispensers
17-6	Blood donations

Healthy People 2010 Objectives

17-1. (Developmental) Increase the proportion of health care organizations that are linked in an integrated system that monitors and reports adverse events.

17-1a. Health care organizations that are linked in an integrated system that monitors and reports adverse events associated with medical therapies.

17-1b. Health care organizations that are linked in an integrated system that monitors and reports adverse events associated with medical devices.

Potential data sources: Office of Postmarketing Drug Risk Assessment (OPDRA), MEDWATCH, and Manufacturer and User Device Experience (MAUDE) Database, FDA.

Collaboration between Federal authorities and researchers with pharmacoepidemiological databases can be helpful in monitoring suspected associations between specific drug exposures and specific adverse events and in estimating such risk. Linked databases could provide immediate access to existing data sources with the capability of providing assessments of study feasibility, responding to specific drug safety questions within a few weeks, and providing a complete analysis of those questions deemed feasible within a few months. Databases should be able to provide exposure data on new molecular entities (those approved within the past 5 years in the United States), to perform feasibility studies of multiple drugs or multiple outcomes, to identify adverse drug events that occur infrequently (that is, at rates lower than can be detected in clinical trials), and to provide data and preliminary analyses within a very short time frame (2 to 4 weeks, depending on the problem).

To identify unknown events more rapidly, there must be an enhanced program of communication for health professionals nationwide that builds on the work of MEDWATCH, encouraging the recognition of unique and rare events. To evaluate and quantify newly identified events, there must be a significant population base under close electronic surveillance for indicators of adverse reactions. A relatively large number of persons (estimated around 20 million) is necessary because so many persons are lost to followup when they move from one provider organization to another. If medical records are ultimately transferred from one provider to another, a number smaller than 20 million may suffice to allow outcomes to be linked with earlier therapies. While maintaining confidentiality, there must be a system for accessing the original patient record.

Staff-model health maintenance organizations (HMOs) are providing health care services to a greater proportion of patients and, therefore, would be a good target for linked data systems capable of picking up rare adverse events and signals in patient populations. HMOs and other health care providers capable of producing complete patient records should be particularly targeted to participate in this development. At present, there is no standard format for these records. HMOs may have different systems at each site or, where organizations have come together to form a single large organization, each remnant of the original organizations may have preserved its own medical record system. HMOs might be encouraged to see safety surveillance data as a product, which could be purchased by the Federal Government and industry after appropriate protection of patient privacy. Alternatively, large employers or government agencies might use their purchasing power to demand safety surveillance as a deliverable under managed care contracts.

The Safe Medical Device Acts of 1990 and 1992 mandate reporting of device-related deaths to FDA and device-related deaths and serious injuries to manufacturers. The program has shown only limited success. Research on the program indicates that the quantity and quality of data received could be enhanced through training and education for end users of medical devices regarding how to report device-related deaths and serious injuries to manufacturers, additional assurance of the protection of data submitted, and regular, timely feedback. The research also suggested that a medical surveillance network could improve the protection of patients and device users by reducing the likelihood of medical-device-related adverse events. The system should collect high-quality data on adverse medical events; analyze the data to identify newly emerging device problems and changes in device use; disseminate data on such problems in a timely manner to concerned parties; and apply the knowledge gained from the reported data to the device approval process and to prevention and control programs.

17-2. (Developmental) Increase the use of linked, automated systems to share information.

17-2a. By health care professionals in hospitals and comprehensive, integrated health care systems.

17-2b. By pharmacists and other dispensers.

Potential data sources: National Survey of Pharmacy Practice in Acute Care and Survey of Managed Care and Ambulatory Care Pharmacy Practice in Integrated Health Systems, American Society of Hospital Pharmacists (ASHP).

Automated information systems enable pharmacists in hospitals, HMOs, and Department of Veterans Affairs (VA) settings to review a patient's medical record, pharmaceutical history, allergies and contraindications to medications, blood chemistries and microbiological drug sensitivities, and treatment schedule files. These systems help administrative personnel in various work settings to process prescription claims and payments, measure the quality of health care, perform cost analyses, provide drug information, perform pharmacoenonomic analyses, and purchase pharmaceutical products.

Dispensers of prescription medications use linked systems to provide warnings about dosing errors and potential adverse events among medications dispensed by different sources to individual patients. In 1993, 95 percent of pharmacies used computer systems.[14] Advances in computer technology should facilitate information sharing in a way that helps health care professionals and researchers link drug products and outcomes in order to benefit individual patients and to discover previously unknown adverse reactions.

Computerization of the medication use process can help prevent prescribing, dispensing, and administration errors. The documented value of direct order entry continues to be confirmed.[15] A recent study demonstrated that replacing handwritten medication orders with a computerized physician order entry system led to a 54 percent reduction in serious medication errors.[16] In addition, the National Patient Safety Foundation at the American Medical Association (AMA) has identified direct computerized order entry as one of the best practices for preventing adverse drug events.[15]

17-3. (Developmental) Increase the proportion of primary care providers, pharmacists, and other health care professionals who routinely review with their patients aged 65 years and older and patients with chronic illnesses or disabilities all new prescribed and over-the-counter medicines.

Potential data sources: National Hospital Ambulatory Medical Care Survey (NHAMCS) and National Ambulatory Medical Care Survey (NAMCS), CDC, NCHS; Survey on Prescription Drug Issues and Usage, AARP; Physician Survey Under the Medication Error Reduction Initiative.

Adults aged 65 years and older account for less than 15 percent of the population, but they use about one-third of all retail prescriptions.[3] This population also purchases at least 40 percent of all nonprescription medicines.[3] Further, older adults are more likely to suffer from multiple chronic diseases and, as a result, may routinely visit multiple physicians, each of whom may be unaware of other medicines that have been prescribed.

In 1998, an AMA House of Delegates report urged physicians to incorporate medication reviews as part of routine office-based practice. The report also encouraged physicians to discuss compliance with the drug regimen with their patients and to inquire about the beneficial or adverse effects of drug therapy during followup office visits. AMA's House of Delegates report suggests that physician medication reviews are critically important with long-term therapy.

17-4. Increase the proportion of patients receiving information that meets guidelines for usefulness when their new prescriptions are dispensed.

Target: 95 percent of patients.

Baseline: Data will be available January 2000.

Target setting method: Target setting method to be established when data are available.

Data source: Patient/Consumer Medication Information Survey, FDA.

A 1992 survey conducted by FDA of the amount of information received by consumers found that 14 percent of people received information about prescription drugs from prescribers and 32 percent from pharmacists.[17] These percentages do not reflect the usefulness of the information received because no content analyses were performed on the informational materials reported in the survey. Congress enacted legislation in 1996 that called on the private sector to develop a plan whereby 95 percent of persons would receive useful written information with their prescriptions by 2006. The Department of Health and Human Services approved guidelines in the Action Plan for the Provision of Useful Prescription Medicine Information in January 1997. In accordance with the plan, patient information materials were to be evaluated in 1999 and 2000. (See Focus Area 28. Vision and Hearing.)

17-5. Increase the proportion of patients who receive verbal counseling from prescribers and pharmacists on appropriate use and potential risks of medications.

Target and baseline:

Objective	Increase in Patients Receiving Oral Counseling From:	1998 Baseline	2010 Target
		Percent	
17-5a.	Prescribers	24	95
17-5b.	Pharmacists	14	95

Target setting method: 296 percent improvement for prescribers and 579 percent improvement for pharmacists. (Better than the best will be used when data are available.)

Data source: National Survey of Prescription Drug Information Provided to Patients, FDA.

Patients and their caregivers should be fully informed about the appropriate use and the risks of newly prescribed prescription medicines. The physician (or other prescribing health care professional) should initially discuss this information with the patient. The next opportunity for verbal counseling arises at the pharmacy. In both settings, written information about the medicine may be conveyed but is most effective when supplemental to verbal counseling. Elements of verbal counseling should include not only how much and how often to take the medication, but also appropriate risk information, including precautions to take and the relevant side effects of the medication.

Participants in a 1997 national symposium on verbal counseling, sponsored by national pharmacy and pharmacist organizations, gave the highest rankings to the following reasons for such low counseling levels: patients do not understand what and why they need to know about their medicines; patients do not demand or expect counseling services from the pharmacists; and patients and payors do not see the value of counseling.[17] These findings suggest that a high number of pharmacists believe that patients do not understand what and why they need to know about their medications and, therefore, do not provide needed counseling. Since 1997, the American Pharmaceutical Association has maintained a policy stating that pharmacists should provide drug-related information to their patients in face-to-face oral consultations, supplemented by written or printed material, or any other means best suited to an individual patient's needs.[18]

The National Council on Patient Information and Education (NCPIE) advocates that health care professionals anticipate consumers' desire for medication information but also recognize their possible reluctance to ask questions. NCPIE has developed several educational campaigns to facilitate question-asking behaviors by consumers and support information-giving behaviors by health care professionals.

17-6. Increase the proportion of persons who donate blood, and in so doing ensure an adequate supply of safe blood.

Target: 8 percent.

Baseline: 5 percent of the total population donated blood in 1994.

Target setting method: 60 percent improvement.

Data source: American Association of Blood Banks.

Data for population groups currently are not collected.

FDA assumes primary responsibility for the safety of the Nation's blood supply. Blood availability, however, is restricted by, among other issues, the number of donors who qualify to give blood. Approximately 5 percent of the population in the United States donates blood once or twice a year. Recruitment of a larger percentage of the population would increase the availability of blood and blood products. Public awareness of the benefits that blood and blood products provide to cancer patients and others in need could serve to elicit a more generous response. Educational campaigns that address underlying public fears regarding the safety of blood donation procedures could also help. Increasing the donor pool would benefit the overall health of the Nation and remove donor incentives that border on remuneration.

Related Objectives From Other Focus Areas

1. Access to Quality Health Care

1-3. Counseling about health behaviors

3. Cancer

3-10. Provider counseling about preventive measures

3-12. Colorectal cancer screening

4. Chronic Kidney Disease

4-8. Medical therapy for persons with diabetes and proteinuria

5. Diabetes

5-17. Self-blood glucose monitoring

7. Education and Community Based Programs

7-7. Patient and family education

7-8. Satisfaction with patient education

7-9. Health care organization sponsorship of community health promotion activities

7-11. Culturally appropriate community health promotion programs

9. Family Planning

9-3. Contraceptive use

9-4. Contraceptive failure

9-5. Emergency contraception

11. Health Communication

11-1. Households with Internet access

11-2. Health literacy

11-3. Research and evaluation of communication programs

11-4. Quality of Internet health information sources

11-5. Centers for excellence

11-6. Satisfaction with providers' communication skills

12. Heart Disease and Stroke

12-10. High blood pressure control

12-12. Blood pressure monitoring

13. HIV

13-6. Condom use

13-7. Knowledge of serostatus

15. Injury and Violence Prevention

15-10. Emergency department surveillance systems

15-13. Deaths from unintentional injuries

23. Public Health Infrastructure

23-1. Public health employee access to Internet

23-2. Public access to information and surveillance data

23-3. Use of geocoding in health data systems

23-14. Access to epidemiology services

24. Respiratory Diseases

24-6. Patient education

24-8. Surveillance systems

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Adverse drug experience (ADE): Any adverse event (defined below) associated with the use of a drug in humans, whether or not considered drug related. These include the following: an adverse event occurring in the course of the use of a drug product in professional practice; an adverse event occurring from a result of a drug overdose, whether accidental or intentional; an adverse event occurring from a drug abuse; an adverse event occurring from drug withdrawal; and any failure of a drug's expected pharmacological action.

Adverse event: Undesirable result from the use of a medical product. Terms used to describe such an event include adverse drug reaction (ADR), adverse experience, and adverse effect. For the purposes of Healthy People 2010, the term *adverse event* is used in most cases to avoid confusion.

Consumer: An individual who consumes or acquires medical products, such as nonprescription (over-the-counter) medicines or nonprescription medical devices.

Medical device: An instrument, apparatus, implement, machine, implant, or other similar or related article intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease.

Medical product: Any prescription and nonprescription drug, device, or biological product intended for use in the diagnosis of disease or other conditions or in the cure, mitigation, treatment, or prevention of the disease.

Medication or device error: A preventable event that may cause a medication or device to be used inappropriately and thus may harm a patient. Harm can occur while the medical product is being used by a health care professional, patient, or consumer.

Off-label use: Uses other than those for which the product is approved.

Patient: An individual who is under medical treatment.

Pharmacoepidemiological database: A computerized database for capturing and manipulating data associated with the collection, analysis, and communication of drug or other therapeutic product risk information.

Risk assessment: Estimation and evaluation of risk.

Risk communication: Interactive process of exchanging risk information.

Superinfection: A new infection complicating the course of antimicrobial therapy by an organism different from that which caused the initial infection. The new infection results from invasion by bacteria or fungi resistant to the antimicrobial in use.

U.S. Pharmacopeia (USP): Organization that promotes the public health by establishing and disseminating officially recognized standards of quality and authoritative information for the use of medicines and other health care technologies.

References

1. Lazarou, J.H; Pomeranz, B.; and Corey, P.N. Incidence of Adverse Drug Reactions in Hospitalized Patients. A Meta-analysis of Prospective Studies. *Journal of the American Medical Association* 279(15):1200-1205, 1998.

2. Food and Drug Administration Task Force on Risk Management. *Managing the Risks from Medical Product Use: Creating a Risk Management Framework.* Rockville, MD: the Administration, May 1999.

3. Johnson, J.A., and Bootan, L.J. Drug-related morbidity and mortality: A cost-of-illness model. *Archives of Internal Medicine* 155:1949-1956, 1995.

4. Bates, D.W.; Cullen, D.J.; Laird, N.; et al. Incidence of adverse drug

events and potential adverse drug events: Implications for prevention. *Journal of the American Medical Association* 274:29-34,1995.

5. U.S. General Accounting Office. *Prescription Drugs and the Elderly*. AO/HEHS-95-152. Washington, DC: the Office, July 1995.

6. Bero, L.A.; Lipton, H.L.; and Bird, J.A. Characterization of geriatric drug-related hospital readmissions. *Medical Care* 29(10):989-1003, 1991.

7. Col, N.; Fanale, J.E.; and Kronholm, P. The role of medication noncompliance and adverse drug reactions in hospitalizations of the elderly. *Archives of Internal Medicine* 150(4):841-845, 1990.

8. Fink, A.; Siu, A.L.; Brook, R.H.; Park, R.E.; and Solomon, D.H. Assuring the quality of health care for older persons. An expert panel's priorities. *Journal of the American Medical Association* 258(14):1905-1908, 1987.

9. Ray, W.A.; Griffin, M.R.; Schaffner, W.; Baugh, D.K.; and Melton, L.J. Psychotropic drug use and the risk of hip fracture. *New England Journal of Medicine* 316(7):363-369, 1987.

10. Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, American Medical Association. Health Literacy: Report of the Council on Scientific Affairs. *Journal of the American Medical Association* 281(6):552-557, February 1999.

11. Federal Register. *Over the Counter Labeling for Drug Manufacturers*. Federal Register 64(51):13253-13303. Washington, DC, 1999.

12. National Research Council. Committee on Risk Perception and Communication. *Improving Risk Communication*. Washington, DC National Academy Press. 1989.

13. Leviton, L.C.; Needlemen, C.E.; and Shapiro, M.A. *Confronting Public Health Risks: A Decision Maker's Guide*. Thousand Oaks, CA: Sage Publications, 1998.

14. Association for Health System-Pharmacists (AHSP). AHSP guidelines on adverse drug reaction monitoring and reporting. *American Journal of Health-System Pharmacy* 52:417-419, 1995.

15. Goldsmith, M.F. National Patient Safety Foundation Studies Systems. *Journal of the American Medical Association* 278:1561, 1997.

16. Bates, D.W.; Leape, L.L.; Cullen, D.J., et al. Effect of computerized physician order entry and a team intervention on prevention of serious medication errors. *Journal of the American Medical Association* 280(15):1311-1316, 1998.

17. Morris, L.A.; Tabak, E.R.; and Gondek, K. Counseling Patients About Prescribed Medication: 12-Year Trends. *Medical Care* 35(10):996-1007, 1997.

18. *American Pharmacy* NS 31(6):28, June 1991; *Journal of the American Pharmaceutical Association* NS17:464, July 1997.

18

Mental Health and Mental Disorders

Co-lead Agencies: National Institutes of Health; Substance Abuse and Mental Health Services Administration

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Goal

Improve mental health and ensure access to appropriate, quality mental health services.

Overview

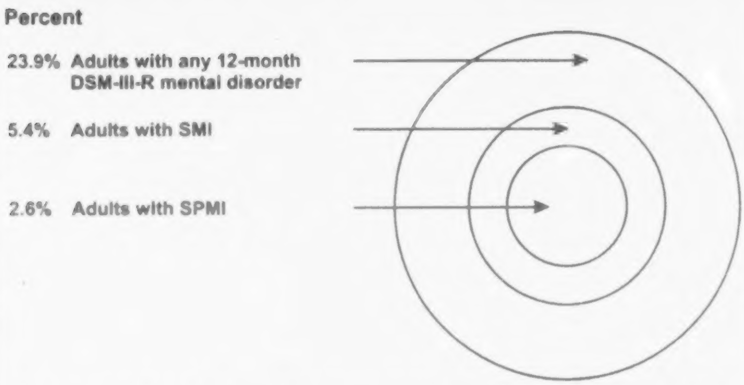
Mental health is a state of successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with adversity. Mental health is indispensable to personal well-being, family and interpersonal relationships, and contribution to community or society. *Mental illness* is the term that refers collectively to all diagnosable mental disorders. *Mental disorders* are health conditions that are characterized by alterations in thinking, mood, or behavior (or some combination thereof), which are associated with distress and/or impaired functioning and spawn a host of human problems that may include disability, pain, or death.

Issues

Mental disorders generate an immense public health burden of disability. The World Health Organization, in collaboration with the World Bank and Harvard University, has determined the "burden of disability" associated with the whole range of diseases and health conditions suffered by peoples throughout the world. A striking finding of the landmark *Global Burden of Disease* study is that the impact of mental illness on overall health and productivity in the United States and throughout the world often is profoundly under-recognized. Today, in established market economies such as the United States, mental illness is on a par with heart disease and cancer as a cause of disability.[1] Suicide—a major public health problem in the United States—occurs most frequently as a consequence of a mental disorder.

Mental disorders occur across the lifespan, affecting persons of all racial and ethnic groups, both sexes, and all educational and socioeconomic groups. Approximately 40 million Americans aged 18 to 64 years, or 22 percent of the population, had a diagnosis of mental disorder alone (19 percent) or of a co-occurring mental and addictive disorder (3 percent) in the past year.[2, 3, 4] At least one in five children and adolescents between ages 9 and 17 has a diagnosable mental disorder in a given year.[5] Mental and behavioral disorders and serious emotional disturbances (SEDs) in children and adolescents can lead to school failure, alcohol or illicit drug use, violence, or suicide.[6, 7, 8] About 5 percent of children and adolescents are extremely impaired by mental, behavioral, and emotional disorders.[9] In later life, the majority of Americans aged 65 years and older cope constructively with the changes associated with aging and maintain mental health, yet an estimated 25

Proportion of Adults Aged 18 Years and Older With Mental Illness
(By level of severity*)



*Any mental disorder is any disorder coded in the *Diagnostic and Statistical Manual of Mental Disorders, III, Revised* (DSM-III-R), American Psychiatric Association, 1987.

SMI = Serious mental illness as coded in the DSM-III-R

SPMI = Serious and persistent mental illness as coded in the DSM-III-R

Source: Kessler, R.C.; Berglund, P.A.; Zbao, S.; Leaf, P.J.; Kouzis, A.C.; Bruce, M.L.; Friedman, R.M.; Grossier, R.C.; Kennedy, C.; Narrow, W.E.; Kuehnel, T.G.; Laska, E.M.; Manderscheid, R.W.; Rosenheck, R.A.; Santori, T.W.; and Schneier, M. The 12-month prevalence and correlates of serious mental illness *Mental Health, United States, 1998*. DHHS Publication Number (SMA) 99-8235. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, 1999.

percent of older people (8.6 million) experience specific mental disorders, such as depression, anxiety, substance abuse, and dementia, that are not part of normal aging. Alzheimer's disease strikes 8 to 15 percent of people over age 65,[10] with the number of cases in the population doubling every 5 years of age after age 60. Alzheimer's disease is thought to be responsible for 60 to 70 percent of all cases of dementia and is one of the leading causes of nursing home placements.[11]

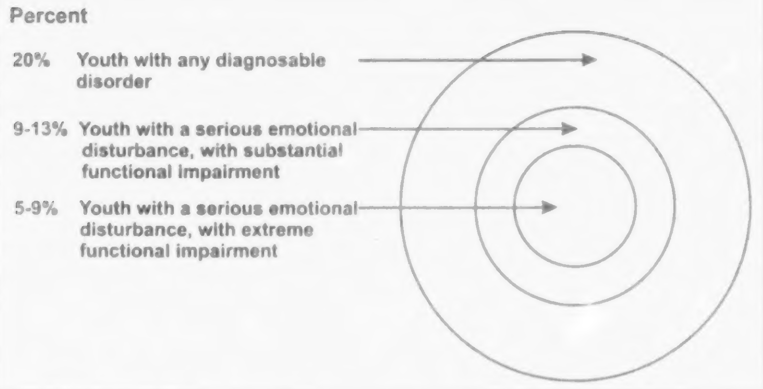
Mental disorders vary in severity and in their impact on people's lives. Mental disorders—such as schizophrenia, major depression and manic depressive or bipolar illness, and obsessive-compulsive disorder and panic disorder—can be enormously disabling.

- *Schizophrenia* will affect more than 2 million Americans in one year.[3] The disorder tends to follow a long-term course, although the severity of symptoms may wax and wane. With modern treatments, increasing numbers of persons with schizophrenia can and do view recovery as an achievable goal.

- *Affective disorders*, which encompass major depression and manic depressive illness, constitute a second category of severe mental illness. The World Health Organization found major depression to be the leading cause of disability among adults in developed nations such as the United States.[1] About 6.5 percent of women, and 3.3 percent of men will have major depression in any year. Manic depressive illness affects around 1 percent of adults, with comparable rates of occurrence in men and women. A high rate of suicide is associated with such mood disorders.[12]

- *Anxiety disorders* encompass several discrete conditions, including panic disorder, obsessive-compulsive disorder, post-traumatic stress disorder, and phobia. More common than other mental disorders, anxiety disorders affect as many as 19 million Americans annually.[13]

Proportion of Youth Aged 9 to 17 Years With Emotional Disturbances (By level of severity)



Source: Friedman, R.M.; Katz-Leavy, J.W.; Manderscheid, R.W.; and Sondheimer, D.L. Prevalence of serious emotional disturbance: An Update. *Mental Health, United States, 1996*. DHHS Publication Number (SMA) 96-3098. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, 1996.

Modern treatments for mental disorders are highly effective, with a variety of treatment options available for most disorders; there is no "one size fits all" treatment. Similarly, there exists today a diverse array of treatment settings, and a person may have the option of selecting a setting based on health care coverage, the clinical needs associated with a particular type or stage of illness, and personal preference.

Prevention scientists have developed, tested, and structured preventive interventions against depression, conduct disorder, and other adverse outcomes in high-risk groups of children. When applied with fidelity, preventive interventions can decrease risk of onset or delay onset of a disorder.

Rates for the most severe forms of mental disorders have been estimated to be between 2.6 and 2.8 percent of adults aged 18 and over during any one year.[13, 14] Despite the effectiveness of treatment and the many paths to obtaining a treatment of choice, only 25 percent of persons with a mental disorder obtain help for their illness in the health care system. In comparison, 60 to 80 percent of persons with heart disease seek and receive care.[15] More critically, 40 percent of all Americans who have a severe mental illness do not seek treatment from either general medical or specialty mental health providers. Indeed, the majority of persons with mental disorders do not receive mental health services. Of those aged 18 years and over getting help, about 15 percent receive help from mental health specialists.[7] Of young people aged 9 to 17 years who have a mental disorder, 27 percent receive treatment in the health sector.[16] However, an additional 20 percent of children and adolescents with mental disorders use mental health services only in their schools.[16]

The direct costs of diagnosing and treating mental disorders totaled approximately $69 billion[17] in 1996. Lost productivity and disability insurance payments due to illness or premature death accounted for an additional $74.9 billion.[17] Crime, criminal justice costs, and property loss contributed another $6 billion to the total cost of mental illness. People with mental illnesses are overrepresented in jail populations; many do not receive treatment.[18] Of the $69 billion spent for diagnosing and treating mental disorders, nearly 70 percent was for the services of mental health specialty providers, with most of the remainder for general medical services providers. The majority—53 percent—of mental health treatment was paid for by public sector sources, including the States and local governments, as well as Medicaid and Medicare and other Federal programs; 47 percent of expenditures were from private sources. Of expenditures from private sources, almost 60 percent were from private insurance.[17] The remainder came from out-of-pocket payments, including insurance copayments, with a small amount from sources such as foundations.

Trends

Research on the brain and behavior in mental illness and mental health is moving at a rapid pace. An increasingly strong consumers' movement in the mental health field is adding urgency to the tasks of translating new knowledge into clinical practices and refining service delivery systems to use new and emerging information optimally for patient/consumer needs. Consumer and family organizations, which formed out of concern over frequent fragmentation of mental health services and lack of accessibility to such services, have assumed a substantial role in supporting development of mental health services. Diverse groups share overlapping goals, including overcoming stigma and preventing discrimination toward persons with mental illness, promoting self-help groups, and promoting recovery from mental illness.[18]

The co-occurrence of addictive disorders among persons with mental disorders is gaining increasing attention from mental health professionals. Among adults aged 18 years and older with a lifetime history of any mental disorder, 29 percent have a history of an addictive disorder; of those with an alcohol disorder, 37 percent have had a mental disorder; and among those with other drug disorders, 53 percent have had a mental disorder.[17] Having both mental and addictive disorders within the same year is a particularly significant clinical treatment issue, complicating treatment for each disorder. About 3 percent of the population aged 18 years and older has been identified as having co-occurring mental and addictive disorders in 1 year.[3, 14] Of those with a serious mental illness, 15 percent have both types of disorder in one year, and of those with a severe and persistent mental illness, 27 percent have both mental and addictive disorders.[11] Co-occurring, or comorbid, mental and addictive disorders are estimated to affect 50 to 60 percent of homeless persons.[20] Comorbid mental and addictive disorders also are evident in children and adolescents.[21] Especially at risk for alcohol use problems are boys diagnosed with so-called externalizing disorders such as conduct problems, oppositional-defiant disorder, and attention deficit/hyperactivity disorder (ADHD).[22] From public health promotion and disease prevention perspectives, it is noteworthy that children and adolescents with mental illnesses often do not become substance abusers until after the mental illness becomes apparent.[23] This time lag creates a window of opportunity when prevention of substance abuse in these children may be possible.[21]

As the life expectancy of Americans continues to grow longer, the sheer number—although not necessarily the proportion—of persons experiencing mental disorders of late life will expand. This trend will present society with unprecedented challenges in organizing, financing, and delivering effective preventive and treatment services for mental health in this population. As recognition continues to grow that depression and certain cognitive losses are treatable disorders and not inevitable concomitants of aging, diagnostic precision in later life and provision of targeted treatment are increasingly urgent.

Health care in the U.S. continues to undergo fundamental structural changes that require creative and flexible responses from service providers, administrators, researchers, and policymakers alike. Two prominent forces of change are Federal and State efforts to improve access to health care, including mental health care, and the rapid growth and impact of managed care. In 1998, the Mental Health Parity Act (P.L. 104-204) was implemented to help increase access to care. Although the Federal Mental Health Parity Act is quite limited in reducing insurance coverage discrepancies between physical and mental disorders, 53 percent of the U.S. population is now covered by State mental health parity laws. The term "parity" or "mental health parity" refers generally to insurance coverage for mental health services that includes the same benefits and restrictions as coverage for other health services.

Disparities

Although mental illnesses, for the most part, are equal opportunity disorders, there are some marked differences in how they present themselves and how they are prevented, diagnosed, and treated by gender, racial and ethnic group, and age.[17]

Differences between men and women are evident in the number of cases of particular mental disorders. For example, major depression affects approximately twice as many women as men.[24] Women who are poor, have little formal schooling, and are on welfare or are unemployed are more likely to experience depression than women in the general population. Anxiety, panic, and phobic disorders affect two to three times as many women as men.[25, 26, 27]

Risk for engaging in suicidal behaviors also differs by gender. A history of physical or sexual abuse appears to be a serious risk factor for suicide attempts in both women and men.[28, 29] Women attempt suicide more often than men,[30] but men's risk of completed suicide is on average 4.5 times higher than women's.[31] This suicide gender gap begins in adolescence and grows through middle and later life.[32]

Specific mental disorders affect men and women at particular stages of life. Schizophrenia occurs more often in young men than in women and usually has its onset in the late teen and early adult years. Eating disorders, affecting up to 2 percent of the population, arise predominantly—but not exclusively—in adolescent and young adult women (90 percent of all cases); the median age of onset is 17 years.[2] Eating disorders often persist into adulthood and have among the highest death rates of any mental disorder.[33] Alzheimer's disease affects equal numbers of women and men, although women's longer average life spans mean that more women than men have Alzheimer's disease at any point in time.[34]

Mental disorders, in aggregate, are as common later in life as they are at other ages, although rates for specific mental disorders vary depending on age and gender.[35] In any 1-year period, the number of cases of major depression in persons aged 65 years and older is approximately 1 percent, which is about half the rate among persons aged 45 to 64 years.[36] Depression rates are much higher, however, among older Americans who experience a physical health problem—12 percent for persons hospitalized for problems such as hip fractures or heart disease.[37] Depression rates for older persons in nursing homes range from 15 to 25 percent.[38] The number of cases of dementias, such as Alzheimer's disease and other severe losses of mental abilities, are as high as 12 percent among persons aged 65 years and older.[39] By age 85 years, the rate grows to 25 percent.[40]

In contrast, rates of primary psychotic disorders drop with age;[41] thus, schizophrenia and persistent paranoid disorders affect fewer than 0.5 percent of older adults.[42] Although fewer old persons attempt suicide than do young persons,[43] the rate of completed suicide is highest among elderly men, who account for about 80 percent of suicides among persons aged 65 years and older.[44] Moreover, elderly white men have a suicide rate six times the national average.[45]

Caution is needed, however, when discussing differences among racial and ethnic groups in the rates of mental illness. Studies of the number of cases of mental health problems among ethnic and racial populations, while increasing in number, remain limited and often inconclusive. Discussion of the rates of existing cases must consider differences in how persons of different cultures and racial groups perceive mental illness. Behavioral problems that Western medicine views as signs of mental illness may be assessed differently by individuals in various ethnic and racial groups. With this caution in mind, along with the recognition that sample sizes for ethnic and racial groups may be limited, examination of existing large-scale studies for mental health trends among ethnic and racial groups of Americans remains important.

Mental disorders are not only the cause of limitations of various life activities but also can be a secondary problem among people with other disabilities. Depression and anxiety, for example, are seen more frequently among people with disabilities than those without disabilities.[46]

Opportunities

Promising universal and targeted preventive interventions, implemented according to scientific recommendations, have great potential to reduce the risk for mental disorders and the burden of suffering in vulnerable populations. Also, social and behavioral research is beginning to explore the concept of *resilience* to identify strengths that may promote health and healing. It is generally assumed that resilience involves the interaction of biological, psychological, and environmental processes. With increased understanding of how to identify and promote resilience, it will be possible to design effective programs that draw on such internal capacity.

There is increasing awareness and concern in the public health sector regarding the impact of stress, its prevention and treatment, and the need for enhanced coping skills. Stress may be experienced by any person and provides a clear demonstration of mind-body interaction. Coping skills, acquired throughout the lifespan, are positive adaptations that affect the ability to manage stressful events. Additional research can help quantify the public health burden of stress and identify ways to prevent or alleviate it through environmental or individual strategies.

Progress in fundamental science and an emphasis on translating new knowledge into clinical applications can strengthen opportunities for future clinical and service system innovations. Research-based treatments afford an unprecedented opportunity to achieve a major reduction in the burden of disease associated with mental illness. With enhancements of clinical services and service systems, recovery is an achievable objective of mental health clinical interventions.

Evidence that mental disorders are legitimate and highly responsive to appropriate treatment promises to be a potent antidote to stigma. Stigma creates barriers to providing and receiving competent and effective mental health treatment and can lead to inappropriate treatment, unemployment, and homelessness. The elimination of stigma associated with mental disorders will in turn encourage more individuals to seek needed mental health care.

Interim Progress Toward Year 2000 Objectives

Four Healthy People 2000 objectives focus on individual behavior in coping with the symptoms of mental disorders: controlling stress, seeking help with personal and emotional problems, obtaining treatment for depression, and using community support programs for severe and persistent disorders. The least progress was achieved on objectives indicative of chronic stress exposure; that is, controlling stress and seeking treatment for depression showed the least progress. Objectives that involve seeking help for personal and emotional problems that result from disabilities, particularly those associated with severe and persistent mental disorders, showed the most progress. Five Healthy People 2000 objectives focus on the development of service delivery mechanisms for early recognition of symptoms and interventions, as well as reductions in the negative consequences of mental disorders. A slight decline in the proportion of nurse practitioners who typically inquire about the parent-child relationship has been documented (from 55 percent to 51 percent). In addition, large declines have taken place in nurse practitioners who typically inquire about their adult patients' cognitive, emotional, or behavioral functioning (from 35 percent to 19 percent for cognitive functioning and from 40 percent to 26 percent, emotional or behavioral functioning). Some offsetting increases in treatment and referral activity are reported (from 20 percent to 22 percent for cognitive problems, from 23 percent to 33 percent for emotional/behavioral problems).

Six Healthy People 2000 objectives focus on the distress and dysfunction that accompany the cognitive, emotional, and behavioral symptoms of mental disorders. The age-adjusted suicide rate in the total population has slightly declined and by 1997 already had met the target level; white men aged 65 and older began the decade at highest risk for suicide (44.4), had declined below year 2000 target in 1994 (38.9) and had declined further by 1997 to 35.5.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review 1998-99*.

Healthy People 2010—Summary of Objectives

Mental Health and Mental Disorders

Goal: Improve mental health and ensure access to appropriate, quality mental health services

Number	Objective
Mental Health Status Improvement	
18-1	Suicide
18-2	Adolescent suicide attempts
18-3	Serious mental illness (SMI) among homeless adults
18-4	Employment of persons with SMI
18-5	Eating disorder relapses
Treatment Expansion	
18-6	Primary care screening and assessment
18-7	Treatment for children with mental health problems
18-8	Juvenile justice facility screening
18-9	Treatment for adults with mental disorders
18-10	Treatment for co-occurring disorders
18-11	Adult jail diversion
State Activities	
18-12	State tracking of consumer satisfaction
18-13	State plans addressing cultural competence
18-14	State plans addressing elderly persons

Mental Health Status Improvement

18-1. Reduce the suicide rate.

Target: 6.0 suicide deaths per 100,000 population.

Baseline: 10.8 suicide deaths per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	Suicide Rate per 100,000
TOTAL	11.4
Race and ethnicity	
American Indian or Alaska Native	12.4
Asian or Pacific Islander	7.0
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	6.3
White	12.3
Hispanic or Latino	6.4
Not Hispanic or Latino	11.9
Black or African American	6.5
White	12.8
Gender	
Female	4.4
Male	19.4
Education level (aged 25 to 64 years)	
Less than high school	18.4
High school graduate	18.9
At least some college	10.2

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

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18-2. Reduce the rate of suicide attempts by adolescents.

Target: 12-month average of 1 percent.

Baseline: 12-month average of 2.6 percent among adolescents in grades 9 through 12 in 1997.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Students in Grades 9 Through 12, 1997	Suicide Attempts
	Percent
TOTAL	2.6
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	DNC
White	DNC
Hispanic or Latino	2.8
Not Hispanic or Latino	DNA
Black or African American	2.4
White	2.0
Gender	
Female	3.3
Male	2.0
Family income level	
Poor	DNA
Near poor	DNA
Middle/high income	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Suicide is a complex behavior that can be prevented in many cases by early recognition and treatment of mental disorders. It was the ninth leading cause of death in the U.S. in 1996 and the third leading killer of young persons between the ages of 15 and 24.[47, 48, 49, 50] At least 90 percent of all people who kill themselves have a mental or substance abuse disorder, or a combination of disorders. However, most persons with a mental or substance abuse disorder do not kill themselves, thus other factors contribute to suicide risk. In addition to mental and substance abuse disorders, risk factors include prior suicide attempt, stressful life events, and access to lethal suicide methods. Suicide is difficult to predict; therefore, preventive interventions focus on risk factors. Thus, reduction in access to lethal methods and recognition and treatment of mental and substance abuse disorders are among the most promising approaches to suicide prevention. More targeted approaches should consider risk factors most salient and appropriate for select populations.

18-3. Reduce the proportion of homeless adults who have serious mental illness (SMI).

Target: 19 percent.

Baseline: 25 percent of homeless adults aged 18 years and older had SMI in 1996.

Target setting method: 24 percent improvement.

Data source: Projects for Assistance in Transition from Homelessness (PATH) Annual Application, SAMHSA, CMHS.

Data for population groups currently are not collected.

Approximately one-quarter of homeless persons in the United States have a serious mental illness (SMI).[51] New approaches developed over the past 10 years provide ways to lower the number of persons who are homeless who also have SMI. Using persistent patient outreach and engagement strategies, service providers are helping homeless persons with SMI connect with mainstream treatment systems.[52, 53]

Treatment alone, however, is not enough. Once permanent housing is located, appropriate mental health and social supports can help persons with mental illness remain off the street. Much of this support occurs in the form of case management, particularly if it is responsive both to emerging mental health issues and to the skills a person needs to function and thrive in the community.

18-4. Increase the proportion of persons with serious mental illnesses who are employed.

Target: 51 percent.

Baseline: 42 percent of persons aged 18 years and older with serious mental illnesses were employed in 1994.

Target setting method: 21 percent improvement.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Data for population groups currently are not analyzed.

Rehabilitation is an essential part of care for adults with severe mental illness. To promote independent living, rehabilitation programs often evaluate and place these persons in jobs. Rehabilitation programs also provide continuing support and help ensure that the placement is working well. Research shows that working provides both economic and personal benefits for persons with SMI that extend beyond a paycheck and workplace companionship.[54] Employment also improves self-esteem and independence; it helps a person to manage his or her own illness and return to community life.[55, 56] A majority of persons with SMI want to be employed and rank employment as a primary personal goal.[57] Helping persons with mental illness secure employment can reduce the use of mental health services and reduce the number of persons who receive Federal and State disability payments.[57]

18-5. (Developmental) Reduce the relapse rates for persons with eating disorders including anorexia nervosa and bulimia nervosa.

Potential data source: Prospective studies of patients with anorexia or bulimia nervosa, NIH, NIMH.

Anorexia nervosa is the most severe eating disorder, characterized by extreme and often life-threatening[58] weight loss associated with a distorted body image and a pathological fear of gaining weight. In cases of severe weight loss, hospital treatment often is needed. Studies suggest that from 30 to 50 percent of patients treated successfully in the hospital become ill again within 1 year of leaving the hospital.[59, 60] Efforts are underway to develop and test specific interventions that can prevent relapse in these patients. For instance, a particular kind of psychotherapy—called cognitive-behavioral treatment—has been found to lower relapse rates in persons with anorexia nervosa.[61] Treatments using medications also have been tried, both alone and in combination with "talking" therapy (unpublished data). Preliminary reports suggest that it might be possible to decrease the chance of relapse, resulting in better long-term prospects for persons with severe anorexia nervosa.

Bulimia nervosa is an eating disorder that involves eating a lot of food (binge eating) and then eliminating it (purging), whether through self-induced vomiting or through the use of diuretics or other medications. Effective short-term treatments exist for this serious mental health problem. When "remission" is defined as being symptom-free of binge eating and purging for at least 4 weeks, about 25 percent of those in remission had a relapse in less than 3 months. Around 9 months after remission, fewer than half (49 percent) of the persons remained symptom-free.[62] Risk for relapse seems to drop after 4 years of being symptom free.[63]

Treatment Expansion

18-6. (Developmental) Increase the number of persons seen in primary health care who receive mental health screening and assessment.

Potential data source: Primary Care Data System/Federally Qualified Health Centers, HRSA.

The general medical/primary care sector consists of health care professionals such as internists, pediatricians, and nurse practitioners in office-based practice, clinics, acute medical/surgical hospitals, and nursing homes. Close to 6 percent of the adult U.S. population use the general medical sector for mental health care, with an average of about 4 mental health visits per year—far lower than the average of 14 visits per year found in the specialty medical sector.[3, 4] The general medical sector has long been identified as the initial point of contact for many adults with mental disorders; for some, these providers may be their only source of mental health services. This attention to mental state in primary care can promote early detection and intervention for mental health problems.

18-7. (Developmental) Increase the proportion of children with mental health problems who receive treatment.

Potential data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA, OAS.

For many children aged 18 years and under, life-long mental disorders may start in childhood or adolescence. For many other children, normal development is disrupted by biological, environmental, and psychosocial factors, which impair their mental health, interfere with education and social interactions, and keep them from realizing their full potential as adults.

Expanding effective services for children, particularly for those with serious emotional disturbance, depends on promoting effective collaboration across critical areas of support: families, social services, health, mental health, juvenile justice, and schools. Better services and collaboration for children with serious emotional disturbance and their families will result in greater school retention, decreased contact with the juvenile justice system, increased stability of living arrangements, and improved educational, emotional, and behavioral development.[64, 65]

18-8. (Developmental) Increase the proportion of juvenile justice facilities that screen new admissions for mental health problems.

Potential data source: Inventory of Mental Health Services in Juvenile Justice Facilities, SAMHSA.

Each year, over 100,000 youths are placed in juvenile justice facilities.[66] Although exact numbers of youths with mental disorders among those entering this system are not available, the proportion is considerably higher than in the general population. Not surprisingly, problems of suicide, self-injurious behavior, and other disorders are significant among youths in the juvenile justice system.[67, 68] Screening activities, including parent or caregiver interviews, should be conducted by qualified mental health personnel.[67] This approach can help ensure that all youths entering the juvenile justice system who also have a treatable mental health problem are identified and receive appropriate treatment.

18-9. Increase the proportion of adults with mental disorders who receive treatment.

Target and baseline:

Objective	**Increase in Adults With Mental Disorders Receiving Treatment**	**1997 Baseline (unless noted)**	**2010 Target**
		Percent	
18-9a.	Adults aged 18 to 54 years with serious mental illness	47 (1991)	55
18-9b.	Adults aged 18 years and older with recognized depression	23	50
18-9c.	Adults aged 18 years and older with schizophrenia	60 (1984)	75
18-9d.	Adults aged 18 years and older with anxiety disorders	38	50

Target setting method: 17 percent improvement.

Data sources: Epidemiologic Catchment Area (ECA) Program, NIH, NIMH; National Household Survey on Drug Abuse (NHSDA), SAMHSA, OAS; Mental Health U.S., 1996, SAMHSA, CMHS.

Adults Aged 18 Years and Older Who Received Treatment for Mental Disorders, 1997 (unless noted)	18-9a. Serious Mental Illness (18 to 54 years) (1991)	18-9b. Recognized Depression (1997)	18-9c. Schizo-phrenia (1984)	18-9d. Anxiety Disorders (1997)
	Percent			
TOTAL	47	23	60	38
Race and ethnicity				
American Indian or Alaska Native	DNA	DSU	DSU	DSU
Asian or Pacific Islander	DNA	DSU	DSU	DSU
Asian	DNA	DNC	DSU	DNC
Native Hawaiian and other Pacific Islander	DNA	DNC	DSU	DNC
Black or African American	DNA	16	DNC	26
White	DNA	24	DNC	39
Hispanic or Latino	DNA	20	42	DSU
Not Hispanic or Latino	DNA	DNC	DNC	40
Black or African American	DNA	DNA	41	DNA
White	DNA	DNA	63	DNA
Gender				
Female	DNA	24	63	32
Male	DNA	21	51	49
Education level				
Less than high school	DNA	22	48	48
High school graduate	DNA	19	71	34
At least some college	DNA	28	66	32

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Serious mental illness. Untreated mental illnesses have human and economic costs associated with them.[68, 69, 70] Lost productivity due to illness, premature death, criminal justice interaction process, and property loss are all part of these costs. Ninety percent of those who complete suicide have a diagnosed mental illness.[3] Helping persons with mental illnesses access appropriate scientifically based treatments is essential.

Depression. At some time or another, virtually all adults will experience a tragic or unexpected loss or a serious setback and times of profound sadness, grief, or distress. Major depressive disorder, however, differs both *quantitatively* and *qualitatively* from normal sadness or grief, which is typically less pervasive and generally more time-limited. Moreover, some of the symptoms of severe depression, such as anhedonia (the inability to experience pleasure), hopelessness, and loss of mood reactivity (the ability to feel a mood uplift in response to something positive) only rarely accompany normal sadness. Suicidal thoughts and psychotic symptoms such as delusions or hallucinations virtually always signify a pathological state. Depression disrupts the lives of depressed persons and their families and reduces economic productivity. Depression also can result in suicide and has an especially severe impact on women.[12, 24] Treatment can alleviate each of these problems. Available medications and psychological treatments, alone or in combination, can help 80 percent of those with depression.[72]

Depression also has a deleterious impact on the economy, costing the United States over $40 billion each year, both in diminished productivity and in use of health care resources. In the workplace, depression is a leading cause of absenteeism and diminished productivity.[73] Although only a minority seek professional help to relieve a mood disorder, depressed people are significantly more likely than others to visit a physician for some other reason.[4]

Schizophrenia is characterized by profound disruption in cognition and emotion, affecting the most fundamental human attributes: language, thought, perception, affect, and sense of self. Symptoms frequently include hearing internal voices or experiencing other sensations not connected to an obvious source (hallucinations) and assigning unusual significance or meaning to normal events or holding fixed false beliefs. No single symptom is definitive for diagnosis; rather, the diagnosis encompasses a pattern of signs and symptoms, in conjunction with impaired occupational or social functioning. The disorder affects 0.5 to 1 percent of the population over the course of a lifetime. Onset generally occurs during young adulthood (mid-20s for men, late-20s for women), although earlier and later onset do occur.[75]

Anxiety disorders are not only common in the United States, but they are ubiquitous across human cultures.[3, 4, 76] Twenty-four percent of the population will experience an anxiety disorder, many with overlapping substance abuse disorders.[19, 77, 78] The longitudinal course of anxiety disorders is characterized by relatively early ages of onset, chronicity, relapsing or recurrent episodes of illness, and periods of disability.[79, 80, 81, 82] Panic disorder and agoraphobia are associated with increased risks of attempted and completed suicide. [25, 83]

18-10. (Developmental) Increase the proportion of persons with co-occurring substance abuse and mental disorders who receive treatment for both disorders.

Potential data sources: National Health Interview Survey (NHIS), CDC, NCHS; National Household Survey on Drug Abuse (NHSDA), SAMHSA, OAS; Replication of National Comorbidity Survey, NIH, NIMH.

Co-occurring mental and addictive disorders are more common than previously recognized. In general, 19 percent of the adult U.S. population have a mental disorder alone (in 1 year); 3 percent have both mental and addictive disorders; and 6 percent have addictive disorders alone. Consequently, about 28 to 30 percent of the population have either a mental *or* addictive disorder.[3, 4] The *lifetime* rates of co-occurrence of mental disorders and addictive disorders are strikingly high. About one in five Americans experience a mental disorder in the course of a year. Nearly one in three adults who have a mental disorder in their lifetime also experiences a co-occurring substance abuse (alcohol or other drugs) disorder, which complicates treatment. Individuals with co-occurring disorders are more likely to experience a chronic course and to use services than are those with either type of disorder alone. Clinicians, program developers, and policymakers need to be aware of these high rates of comorbidity. While an integrated approach may be indicated for persons with serious mental illness and co-occurring addictive disorders, how public health service systems can best address issues of treating the full range of persons with co-occurring mental and substance-related disorders remains a challenge. Treatment protocols continue to be refined as research findings and promising practices are disseminated to programs and practitioners.

18-11. (Developmental) Increase the proportion of local governments with community-based jail diversion programs for adults with serious mental illnesses.

Potential data source: National Survey of Jail Mental Health Diversion Programs, SAMHSA.

Nearly 700,000 persons with active symptoms of severe mental illness are admitted to jails each year. They constitute about 7 percent of the jail population.[84] Individuals with SMI were over-represented in jails compared to their numbers in the general population. Some people arrested for nonviolent crimes could be better served if diverted from the jail system to a community-based mental health treatment program.[85] Key components of a model diversion program are: (1) identifying specific program elements for diversion with accompanying resources and identified staff, (2) a specific target population, (3) a goal of avoiding or decreasing the time of incarceration, and (4) a way to link target population members with community-based mental health services. [85]

State Activities

18-12. Increase the number of States and the District of Columbia that track consumers' satisfaction with the mental health services they receive.

Target: 30 States.

Baseline: 10 States in 1998.

Target setting method: 200 percent improvement.

Data source: Mental Health Statistics Improvement Program, SAMHSA.

The health care industry increasingly is using consumer opinion to gain information on service needs and changes. Patient satisfaction studies are becoming standard practice for many health care organizations. Health care executives have indicated that consumers have a major impact on the development of health care products.[86] Nearly 90 percent of health care executives reported that they have expanded both the number and type of services based on consumer preference. The Mental Health Statistics Improvement Program has pioneered the development of a consumer-oriented mental health report card that includes a consumer survey designed to address questions of access, appropriateness, quality, and outcome of care.

Rehabilitation is an essential part of care for adults with severe mental illness. To promote independent living, rehabilitation programs often evaluate and place these persons in jobs. Rehabilitation programs also provide continuing support and help ensure that the placement is working well. Research shows that working provides both economic and personal benefits for persons with SMI that extend beyond a paycheck and workplace companionship.[54] Employment also improves self-esteem and independence; it helps a person to manage his or her own illness and return to community life. [55, 56] A majority of persons with SMI want to be employed and rank employment as a primary personal goal.[57] Helping persons with mental illness secure employment can reduce the use of mental health services and reduce the number of persons who receive Federal and State disability payments. [57]

18-13. (Developmental) Increase the number of States, Territories, and the District of Columbia with an operational mental health plan that addresses cultural competence.

Potential data source: National Technical Assistance Center for State Mental Health Systems (NRI/NASMHPD), SAMHSA, CMHS.

To work effectively, health care providers need to understand the differences in how various populations in the United States perceive mental health and mental illness and treatment services. These factors affect whether people seek mental health care, how they describe their symptoms, the duration of care, and the outcomes of the care received. Research has shown that various select populations use mental health services differently. They may not seek mental health services in the formal system, drop out of care, or seek care at much later stages of illness, driving the service cost higher.[87, 88, 89] This pattern of use appears to be the result of a community-based mental health service system that is not culturally relevant, responsive, or accessible to select populations.[89, 90, 91, 92] Hospitals have become the primary mental health treatment site for a disproportionate number of African Americans.[93, 94, 95, 96]

18-14. Increase the number of States, Territories, and the District of Columbia with an operational mental health plan that addresses mental health crisis interventions, ongoing screening, and treatment services for elderly persons.

Target: 50 States and the District of Columbia.

Baseline: 24 States.

Target setting method: Total coverage.

Data source: National Technical Assistance Center for State Mental Health Systems (NRI/NASMHPD), SAMHSA, CMHS.

The Nation is growing older; the number and proportion of the population aged 65 years and older will grow rapidly after 2010. As the Nation ages, the mental health needs of elderly persons must be addressed because their needs will continue to grow. Mood disorders affect between 2 and 4 percent of community-living elderly persons.[38] Older Americans with clinically significant depressive symptoms range from 10 to 15 percent of the population.[97] State mental health authorities and localities should become increasingly engaged in meeting the mental health needs of this growing population.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-1. Persons with health insurance
1-2. Health insurance coverage for clinical preventive services
1-3. Counseling about health behaviors
1-4. Source of ongoing care
1-5. Usual primary care provider
1-6. Difficulties or delays in obtaining needed health care
1-7. Core competencies in health provider training
1-8. Racial and ethnic representation in health professions
1-10. Delay or difficulty in getting emergency care
1-11. Rapid prehospital emergency care

1-12. Single toll-free number for poison control centers
1-13. Trauma care systems
1-14. Special needs of children
1-15. Long-term care services

2. Arthritis, Osteoporosis, and Chronic Back Conditions

2-4. Help in coping

3. Cancer

3-10. Provider counseling about preventive measures

6. Disability and Secondary Conditions

6-1. Standard definition of people with disabilities in data sets
6-2. Feelings and depression among children with disabilities
6-3. Feelings and depression interfering with activities among adults with disabilities
6-4. Social participation among adults with disabilities
6-5. Sufficient emotional support among adults with disabilities
6-6. Satisfaction with life among adults with disabilities
6-7. Congregate care of children and adults with disabilities
6-8. Employment parity
6-9. Children and youth with disabilities included in regular education programs
6-10. Accessibility of health and wellness programs
6-11. Assistive devices and technology
6-12. Environmental barriers affecting participation
6-13. Surveillance and health promotion programs

7. Educational and Community-Based Programs

7-1. High school completion
7-2. School health education
7-3. Health-risk behavior information for college and university students
7-4. School nurse-to-student ratio
7-5. Worksite health promotion programs
7-6. Participation in employer-sponsored health promotion activities
7-7. Patient and family education
7-9. Health care organization sponsorship of community health promotion activities
7-10. Community health promotion programs
7-11. Culturally appropriate community health promotion programs
7-12. Older adult participation in community health promotion activities

9. Family Planning

9-1. Intended pregnancy
9-2. Birth spacing
9-3. Contraceptive use
9-4. Contraceptive failure
9-5. Emergency contraception
9-6. Male involvement
9-7. Adolescent pregnancy
9-8. Abstinence before age 15 years
9-9. Abstinence among adolescents aged 15 to 17 years

9-10. Pregnancy prevention and sexually transmitted disease (STD) protection
9-11. Pregnancy prevention education
9-13. Insurance coverage for contraceptive supplies and services

11. Health Communication

11-1. Households with Internet access
11-2. Health literacy
11-3. Research and evaluation of communication programs
11-4. Quality of Internet health information sources
11-5. Centers for excellence
11-6. Satisfaction with providers' communications skills

13. HIV

13-1. New AIDS cases
13-5. New HIV cases
13-13. Treatment according to guidelines
13-17. Perinatally acquired HIV infection

15. Injury and Violence Prevention

15-10. Emergency department surveillance systems
15-11. Hospital discharge surveillance systems
15-12. Emergency department visits
15-33. Maltreatment and maltreatment fatalities of children
15-34. Physical assault by intimate partners
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15-36. Sexual assault other than rape
15-37. Physical assaults
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16-2. Child deaths
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20-5. Work-related homicides
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23-13. Access to public health laboratory services
23-14. Access to epidemiology services
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25. Sexually Transmitted Diseases

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25-8. Heterosexually transmitted HIV infection in women
25-9. Congenital syphilis
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25-11. Responsible adolescent sexual behavior
25-12. Responsible sexual behavior messages on television
25-14. Screening in youth detention facilities and jails
25-15. Contracts to treat nonplan partners of STD patients
25-17. Screening of pregnant women
25-18. Compliance with recognized STD treatment standards
25-19. Provider referral services for sex partners

26. Substance Abuse

26-7. Alcohol- and drug-related violence
26-8. Lost productivity
26-9. Substance-free youth
26-10. Adolescent and adult use of illicit substances
26-11. Binge drinking
26-12. Average annual alcohol consumption
26-13. Low-risk drinking among adults
26-14. Steroid use among adolescents
26-15. Inhalant use among adolescents
26-16. Peer disapproval of substance abuse
26-17. Perception of risk associated with substance abuse
26-18. Treatment gap for illicit drugs
26-22. Hospital emergency department referrals
26-23. Community partnerships and coalitions

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Anxiety Disorders: Anxiety disorders have multiple physical and psychological symptoms, but all have in common feelings of apprehension, tension, or uneasiness. Among the anxiety disorders are panic disorder, agoraphobia, obsessive compulsive disorder, post-traumatic stress disorder, and generalized anxiety disorder.

Case management: Practice in which the service recipient is a partner in his or her recovery and self-management of mental illness and life.

Co-occurring/comorbidity: In general, the existence of two or more illnesses—whether physical or mental—at the same time in a single individual. In this chapter, comorbidity specifically means the existence of a mental illness and a substance abuse disorder or a mental and a physical illness in the same person at the same time.

Consumer: Any person using mental health services.

Cultural competence: In this chapter, a group of skills, attitudes, and knowledge that allows persons, organizations, and systems to work effectively with diverse racial, ethnic, and social groups.

Depression: Depression is a state of low mood that is described differently by people who experience it. Commonly described are feelings of sadness, despair, emptiness, or loss of interest or pleasure in nearly all things. Depression can also be experienced in other disorders, such as bipolar disorder (manic-depressive disorder).

Diagnosable mental illness: This term includes all people with a mental illness in a specified population group, whether or not they have received a formal diagnosis from a medical or mental health professional.

Homeless: A person who lacks housing. The definition also includes a person living in transitional housing or a person who spends most nights in a supervised public or private facility providing temporary living quarters.

Juvenile justice facility: Includes detention centers, shelters, reception or diagnostic centers, training schools, ranches, forestry camps or farms, halfway houses and group homes, and residential treatment centers for young offenders.

Mental health services: Diagnostic, treatment, and preventive care that helps improve how persons with mental illness feel both physically and emotionally as well as how they interact with other persons. These services also help persons who have a strong risk of developing a mental illness.

Mental illness: The term that refers collectively to all diagnosable mental disorders. *Mental disorders* are health conditions that are characterized by alterations in thinking, mood, or behavior (or some combination thereof), that are all mediated by the brain and associated with distress and/or impaired functioning. Mental disorders spawn a host of human problems that may include personal distress, impaired functioning and disability, pain, or death. These disorders can occur in men and women of any age and in all races and ethnic groups. They can be the result of family history, genetics, or other biological, environmental, social, or behavioral factors that occur alone or in combination.

Resilience: Manifested competence in the context of significant challenges to adaptation or development.

Schizophrenia: A mental disorder lasting for at least 6 months, including at least 1 month with two or more active-phase symptoms. Active phase symptoms include delusions, hallucinations, disorganized speech, grossly disorganized or catatonic behavior, and other symptoms. Schizophrenia is accompanied by marked impairment in social or occupational functioning.

Screening for mental health problems: A brief formal or informal assessment to identify persons who have mental health problems or are likely to develop such problems. The screening process helps determine whether a person has a problem and, if so, the most appropriate mental health services for that person.

Serious emotional disturbance (SED): A diagnosable mental disorder found in persons from birth to 18 years of age that is so severe and long lasting that it seriously interferes with functioning in family, school, community, or other major life activities.

Serious mental illness (SMI): A diagnosable mental disorder found in persons aged 18 years and older that is so long lasting and severe that it seriously interferes with a person's ability to take part in major life activities.

References

1. Murray, C.J.L., and Lopez, A.D. The Global Burden of Disease. Cambridge, MA: Harvard University Press, 1996.

2. Regier, D.A.; Narrow, W.; Rae, D.S. Unpublished NIMH analyses, 1999.

3. Regier, D.A.; Narrow, W.; Rae, D.S.; et al. The de facto U.S. mental and addictive disorders service system. Epidemiologic Catchment Area prospective 1-year prevalence rates of disorders and services. *Archives of General Psychiatry* 50:85-94, 1993.

4. Kessler, R.C.; McGonagle, K.A.; Zhao, S.; et al. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the U.S. *Archives of General Psychiatry* 51:8-19, 1994.

5. Shaffer, D.; Fisher, P.; Dulcan, M.K.; et al. The NIMH Diagnostic Interview Schedule for Children, version 2.3 (DSIC 2.3): Description, acceptability, prevalence rates and performance in the MECA study. Methods for the Epidemiology of Child and Adolescent Mental Disorders Study. *Journal of the American Academy of Child and Adolescent Psychiatry* 35:865-877, 1996.

6. Brandenberg, N.; Friedman, R.; and Silver, S. The epidemiology of childhood psychiatric disorders: Prevalence findings from recent studies. *Journal of the American Academy of Child and Adolescent Psychiatry* 29:76-83, 1990.

7. Taylor, E.; Chadwick, O.; Heptinstall, E; et al. Hyperactivity and conduct problems as risk factors for adolescent development. *Journal of the American Academy of Child and Adolescent Psychiatry* 35:1213-1226, 1996.

8. Foley, H.A.; Carlton, C.O.; and Howell, R.J. The relationship of attention deficit hyperactivity disorder and conduct disorders to juvenile delinquency: Legal implications. *Bulletin of the American Academy of Psychiatry Law* 24:333-345, 1996.

9. Friedman, R.M.; Katz-Levey, J.W.; Manderschied, R.W.; and Sondheimer, D.L. Prevalence of serious emotional disturbance in children and adolescents. In: Manderscheid, R.W., and Sonnenschein, M.A. (eds.). *Mental Health, United States, 1996*. Rockville, MD: Center for Mental Health Services, 1996, 71-78.

10. Ritchie, K., and Kildea, D. Is senile dementia "age-related" or "ageing related"?—evidence from meta analysis of dementia prevalence in the oldest old. *Lancet* 346:931-934, 1995.

11. Lebowitz, B.D.; Pearson, J.L.; and Cohen, G.D. Clinical geriatric psychopharmacology. Baltimore, MD: Williams & Wilkins, 1998.

12. Robins, L.N.; Locke, B.Z.; and Regier, D.A. An overview of psychiatric disorders in America. In: Robins, L.N., and Regier, D.A. (eds.). *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study*. New York, NY: Free Press, 1991.

13. National Advisory Mental Health Council. Health care reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry* 150:1447-1465, 1993.

14. Kessler, R.C.; Berglund, P.A.; Zhao, S.; et al. The 12-month prevalence and correlates of serious mental illness. In: *Mental Health, United States, 1996*. (DHHS Publication No. (SMA) 96-3098). Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, 1996.

15. National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC). *Prevalence of Chronic Circulatory Conditions: Vital and Health Statistics*, Series No. 10(94). DHEW Pub. No. NRA 75-1521. Hyattsville, MD: National Center for Health Statistics, 1992.

16. Howard, K.I.; Cornille, T.A.; Lyons, J.S.; et al. Patterns of mental health service utilization. *Archives of General Psychiatry* 53:696-703, 1996.

17. U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration and National Institutes of Health. *Mental Health: A Report of the Surgeon General*, 1999.

18. Frese, F.J. Advocacy, recovery, and the challenges of consumerism for schizo-

phrenia. *Psychiatric Clinics of North America* 21:233-249, 1998.

19. Regier, D.A.; Farmer, M.E.; Rae, D.S.; et al. Comorbidity of mental disorders with alcohol and other drug abuse. Results from the Epidemiologic Catchment Area (ECA) Study. *Journal of the American Medical Association* 264:2511-2518, 1990.

20. Interagency Council on the Homeless. *Outcasts on Main Street*. HHS Pub. No. ADM 92-1904. Rockville MD: Alcohol, Drug Abuse, and Mental Health Services Administration, 1992.

21. Kessler, R.C.; Nelson, C.B.; McGonagle, K.A.; et al. The epidemiology of co-occurring addictive and mental disorders: Implications for prevention and service utilization. *American Journal of Orthopsychiatry* 66:21-23, 1996.

22. Winkle, M. A retrospective measure of childhood behavior problems and its use in predicting adolescent problem behaviors. *Journal of Studies in Alcohol* 54:421-422, 1993.

23. Christie, K.A.; Burke, Jr., J.D.; Regier, D.A.; et al. Epidemiologic evidence for early onset of mental disorders and higher risk of drug abuse in young adults. *American Journal of Psychiatry* 145:971-975, 1988.

24. Weissman, M.M., and Klerman, J.K. Depression: Current understanding and changing trends. *Annual Review of Public Health* 13:319-339, 1992.

25. American Psychiatric Association. Practice guidelines for the treatment of patients with panic disorder. *American Journal of Psychiatry* 155(suppl.12):1-34, 1998.

26. Brawman-Mintzer, O., and Lydiard, R.B. Generalized anxiety disorder: Issues in epidemiology. *Journal of Clinical Psychiatry* 57(suppl.7):3-8, 1996.

27. Regier, D.A.; Farmer, M.E.; Rae, D.S.; Myers, J.K.; Kramer, M.; Robins, L.N.; George, L.K.; Karno, M.; and Locke, B.Z. One-month prevalence of mental disorders in the United States and sociodemographic characteristics: the Epidemiologic Catchment Area study. *Acta Psychiatrica Scandinavia* 88, 35-47, 1993.

28. Van der Kolk, B.A., and Perry, J.L. Childhood origins of self-destructive behavior. *American Journal of Psychiatry* 148:1665-1671, 1991.

29. NCHS, CDC. *Vital Statistics of the United States*, Tables 1-9. Hyattsville, MD: National Center for Health Statistics, 1991.

30. Moscicki, E.K. Gender differences in completed and attempted suicide. *Annals of Epidemiology* 4:152-158, 1994.

31. Centers for Disease Control and Prevention. Retrieved May 25, 1999. <www.cdc.gov/ncipc/osp/mortdata.htm>

32. National Center for Health Statistics, Centers for Disease Control and Prevention (CDC). Vital Statistics of the United States, Tables 1-9. Washington, DC: U.S. Government Printing Office, 1991.

33. Herzog, D.B., and Copeland, P.N. Medical progress: Eating disorders. *New England Journal of Medicine* 313:295-303, 1985.

34. CDC. *Priorities for Women's Health*. Atlanta GA: the Centers, 1993.

35. McIntosh, J.L., Pearson, J.L., and Lebowitz, B.D. Mental disorders of elderly men. In: Kosberg, J.I., and Kaye, L.W. (eds.). *Elderly Men: Special Problems and Professional Challenges*. New York, NY: Springer Publishing Company, 1997, 193-215.

36. Weissman, M.M.; Bruce, M.L.; Leaf, P.J.; Florio, L.P.; and Holzer, C.E. Affective disorders. In: Robbins, L.N., and Regier, D.A. (eds.). *Psychiatric Disorders in America*. New York, NY: Free Press, 1991, 53-80.

37. Koening, H.G., and Blazer, D.G. Mood disorders and suicide. In: Birren, J.E.; Sloane, R.B.; and Cohen, G.D. (eds.). *Handbook of Mental Health and Aging*, 2nd ed. San Diego, CA: Academic Press, 1992, 379-407.

38. National Institutes of Health Consensus Development Panel on Depression in Late Life. Diagnosis and treatment of depression in late life. *Journal of the American Medical Association* 268:1018-1024, 1992.

39. Evans, D.A.; Funkstien, H.H.; Albert, M.S.; Scherr, P.A.; Cook, N.R.; Chown, M.J.; Hubert, L.E.; Hennekens, C.H.; and Taylor, J.D. Prevalence of Alzheimer's disease in a community population of older persons: Higher than previously reported. *Journal of the American Medical Association* 262:2551-2556, 1989.

40. Jorm, A.F.; Korten, A.E.; and Henderson, A.S. The prevalence of dementia: A quantitative integration of the literature. *Acta Psychiatrica Scandinavia* 76:465-479, 1987.

41. Zubenko, G.S.; Mulsant, B.H.; Sweet, R.A.; et al. Mortality of elderly patients with psychiatric disorders. *American Journal of Psychiatry* 154(10):1360-1368, 1997.

42. Myers, J.K.; Weissman, M.M.; Tischler, G.L.; Holzer, C.E.; Leaf, P.J.; Orvaschel, H.; Anthony, J.C.; Boyd, J.H.;

Burke, J.D.; Kramer, M.; and Stoltzman, R. Six month prevalence of psychiatric disorders in three communities. *Archives of General Psychiatry* 41:959-967, 1984.

43. Moscicki, E.K.; O'Carroll, P.; Rae, D.S.; Locke, B.Z.; Roy, A.; and Regier, D.A. Suicide attempts in the Epidemiologic Catchment Area study. *The Yale Journal of Biology and Medicine* 61:259-268, 1998.

44. CDC. Suicide among older persons—United States, 1980-1992. *Morbidity and Mortality Weekly Report* 45(1):3-6, 1996.

45. CDC. Suicide Deaths and Rates Per 100,000. Retrieved November 23, 1999 <www.cdc.gov/ncipc/data/us9794/Suic.htm>.

46. CDC. Health Related Quality of Life and Activity Limitation: Eight States, 1995. *Morbidity and Mortality Weekly Report* (47):134-140, 1998.

47. Montano, C.B. Recognition and treatment of depression in a primary care setting. *Journal of Clinical Psychiatry* 55:18-34, 1994.

48. NCHS, CDC. *Health United States, 1996.* Hyattsville, MD: Public Health Service, 1997.

49. National Institute of Mental Health Suicide Research Consortium. *Suicide Facts.* Rockville, MD: National Institute of Mental Health, 1997.

50. CDC. Ten leading causes of death by age group, 1996. [Online]. Retrieved November 23, 1999. <www.cdc.gov/ncipc/osp/leadcaus/101c96.htm>

51. Tessler, R., and Dennis, D. *A Synthesis of NIMH-Funded Research Concerning Persons Who Are Homeless and Mentally Ill.* DHHS Pub. No. 94-303014. Rockville MD: National Institute of Mental Health, 1989.

52. Lam, J.A., and Rosenheck, R. Street outreach for homeless persons with serious mental illness: Is it effective? *Medical Care* 37:894-907, 1999.

53. Lehman, A., and Codray, D. Prevalence of alcohol, drug, and mental disorders among the homeless: One more time. *Contemporary Drug Problems* 20:355-383, 1993.

54. Bell, M.D., and Lysaker, P.H. Clinical benefits of paid work activity in schizophrenia: 1-year follow up. *Schizophrenia Bulletin* 23:317-328, 1997.

55. Arns, P.G., and Linney, J.A. Work, self, and life satisfaction for persons with severe and persistent mental disorders. *Psychosocial Rehabilitation Journal* 17:63-79, 1993.

56. Fabian, E. Supported employment and the quality of life: Does a job make a difference? *Rehabilitation Counseling Bulletin* 2:84-87, 1992.

57. Rogers, E.S.; Sciarappa, K.; and MacDonald, W.K. A benefit-cost analysis of a supported employment model for persons with psychiatric disability. *Evaluation and Program Planning* 18:105-115,1995.

58. Herzog, D.B., and Copeland, P.N. Medical progress: Eating disorders. *New England Journal of Medicine* 313:295-303, 1985.

59. Eckert, E.D.; Halmi, K.A.; Marchi, P.; Grove, W.; and Crosby, R. Ten-year follow-up of anorexia nervosa: Clinical course and outcome. *Psychological Medicine* 25:143-156, 1995.

60. Strober, M.; Freeman, R.; and Morrell, W. The long-term course of severe anorexia nervosa in adolescents. Survival analysis of recovery, relapse, and outcome predictors over 10-15 years in a prospective study. *International Journal of Eating Disorders* 22:339-360, 1997.

61. Pike, K.M. Long-term course of anorexia nervosa: Response, relapse, remission, and recovery. *Clinical Psychology Review* 18:447-475, 1998.

62. Field, A.E.; Herzog, D.B.; Keller, M.B.; West, J.; Nussbaum, K.; and Colditz, G.A. Distinguishing recovery from remission in a cohort of bulimic women: How should asymptomatic periods be described. *Journal of Clinical Epidemiology* 50:1339-1345, 1997.

63. Keel, P.K., and Mitchell, J.E. Outcome of bulimia nervosa. *American Journal of Psychiatry* 154:313-321, 1997.

64. Greenberg, M.T.; Domitrovich, C.; and Bumbarger, B. *Preventing Mental Disorders in School-Aged Children: A Review of the Effectiveness of Prevention Programs.* Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, May 1999.

65. Woodruff, D.S.; Osher, D.; Hoffman, C.C.; et al. The role of education in a system of care: Effectively serving children with emotional or behavioral disorders. In: *Systems of Care: Promising Practices in Children's Mental Health, 1998 Series, Volume III.* Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Substance Abuse and Mental Health Services Administration,

Center for Mental Health Services, 1999.

66. Otto, R.K. Prevalence of mental disorders among youth in the juvenile justice system. In: *Responding to the Mental Health Needs of Youth in the Juvenile Justice System.* Washington, DC: The National Coalition for the Mentally Ill in the Criminal Justice System, 1992.

67. Blazer, D., and Williams, C.D. Epidemiology of dysphoria and depression in an elderly population. *American Journal of Psychiatry* 137:439-444, 1980.

68. Cocozza, J.J. Identifying the needs of juveniles with co-occurring disorders. *Corrections Today*, December 1997.

68. Wohlfarth, T.D.; Brink, W.V.D.; Ormel, J.; Koeter, M.W.J.; and Oldehinkel, T.J. The relationship between social disfunctioning and psychopathology among primary care attenders. *British Journal of Psychiatry* 163:37-44, 1993.

69. Wells, K.; Stewart, A.; Hays, R.; Burnam, M.; Rogers, W.; Daniels, M.; Berry, S.; Greenfield, S.; and Ware, J. The functioning and well-being of depressed patients: Results from the Medical Outcomes Study. *Journal of the American Medical Association* 262:914-919, 1989.

70. Dohrenwend, B.S.; Dohrenwend, B.P.; Link, B.; and Levav, I. Social functioning of psychiatric patients in contrast with community cases in the general population. *Archives of General Psychiatry* 40:1174-1182, 1983.

71. Moscicki, E.K. Identification of suicide risk factors using epidemiologic studies. *Psychiatric Clinics of North America* September, 20:3, 499-517, 1997.

72. National Institute of Mental Health. Depression Facts, 1999. Retrieved November 23, 1999 <http://www.nimh.nih.gov/depression/index.htm>.

73. Greenberg, P.E.; Stiglin, L.E.; Finkelstein, S.N.; et al. The economic burden of depression. *Journal of Clinical Psychiatry* 54:425-426, 1993.

73. Katon, W.J. Will improving detection of depression in primary care lead to improved depressive outcomes? *General Hospital Psychiatry* 17:1-2, 1995.

74. Fabian, E. Supported employment and the quality of life: Does a job make a difference? *Rehabilitation Counseling Bulletin* 2:84-87, 1992.

75. Hafner, H., and an der Heiden, W. Epidemiology of Schizophrenia. *Canadian Journal of Psychiatry* 42:139-151, 1997.

76. Weissman, M.M.; Bland, R.C.; Canino, G.J.; et al. The cross-national epidemiology of panic disorder. *Archives of General Psychiatry* 54:305-309, 1997.

77. Magee, W.J.; Eaton, W.W.; Wittchen, H.U.; McGonagle, K.A.; and Kessler, R.C. Agoraphobia, simple phobia, and social phobia in the National Comorbidity Survey. *Archives of General Psychiatry* 53:159-168, 1996.

78. Goldberg D.P., and Lecrubier Y. Form and frequency of mental disorders across centres. In: Ustun T.B., and Sartorius, N. (eds.). *Mental illness in general health care: An international study.* New York: John Wiley & Sons, 1995, 323-334.

79. Liebowitz, M.R. Panic disorder as a chronic illness. *Journal of Clinical Psychiatry* 58(suppl.)13:5-8, 1997.

80. Gorman, J.M., and Coplan, J.D. Comorbidity of depression and panic disorder. *Journal of Clinical Psychiatry* 57(suppl.10):34-41, 42-43, 1996.

81. Keller, M.B., and Hanks, D.L. The natural history and heterogeneity of depressive disorders: implications for rational antidepressant therapy. *Journal of Clinical Psychiatry* 55(suppl.A):25-31; discussion 32-3, 98-100, 1994.

82. Marcus, S.C.; Olfson, M.; Pincus, H.A.; Shear, M.K.; and Zarin, D.A. Self-reported anxiety, general medical conditions, and disability bed days. *American Journal of Psychiatry* 154:1766-1768, 1997.

83. Hornig, C.D., and McNally, R.J. Panic disorder and suicide attempt. A reanalysis of data from the Epidemiologic Catchment Area study. *British Journal of Psychiatry* 167:76-79, 1995.

84. Morris, S.M.; Steadman, H.J.; Veysey, B.M. Mental health services in United States jails: A Survey of Innovative Practices. *Criminal Justice and Behavior* 24:3-19, 1997.

85. Steadman, H.J.; Morris, S.M.; and Dennis, D. The diversion of mentally ill persons from jails to community-based services: A profile of programs. *American Journal of Public Health* 12:1630-1635, 1995.

86. KPMG Peat Marwick LLP and Northwestern University. New Voices: *Consumerism in Health Care.* 1998.

87. Davis, K. *Exploring the Intersection Between Cultural Competency and Managed Behavioral Care Policy Implications for State and County Mental Health Agencies.* Alexandria, GA: National Technical Assistance Center for State Mental

Health Planning (NTAC), 1997.

88. Lefley, H.P. Culture and chronic mental illness. *Hospital and Community Psychiatry* 41:277-286, 1990.

89. Munoz, F.U., and Endo, R., (eds.). *Perspectives on Minority Group Mental Health.* Washington, DC: University Press of America, 1982.

90. Martinez, K. Cultural sensitivity in family therapy gone awry. *Hispanic Journal of Behavioral Sciences* 16:75-89, 1994.

91. Mason, J.L. Developing culturally competent organizations. Focal Point: *The Bulletin of Research and Training Center on Family Support and Children's Mental Health* 8:1-8, 1994.

92. Miller, S.O.; O'Neal, G.S.; and Scott, C.A., (eds.). *Primary Prevention Approaches to the Development of Mental Health Services for Ethnic Minorities: Challenges to Social Work Education and Practice.* New York, NY: Council on Social Work Education.

93. Snowden, L., and Hoschuh, J. Ethnic differences in emergency psychiatric care and hospitalization in a program for the severely mentally ill. *Community Mental Health Journal* 28, 1992.

94. Snowden, L., and Cheung, F. Use of inpatient services by members of ethnic groups. *American Psychologist* 45:347-355, 1990.

95. Schffler, R.M., and Miller, A.B. Demand analysis of service use among ethnic subpopulations. *Inquiry* 26:202-215, 1989.

96. Manderscheid, R.W., and Sonnenschein, M.A. *Mental Health, United States 1985.* Rockville, MD: National Institute of Mental Health, 1987.

97. Blazer, D., and Williams, C.D. The epidemiology of dysphoria and depression in an elderly population. *American Journal of Psychiatry* 137:439-444, 1990.

19

Nutrition and Overweight

Co-Lead Agencies: Food and Drug Administration;
National Institutes of Health

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Goal

Promote health and reduce chronic disease associated with diet and weight.

Overview

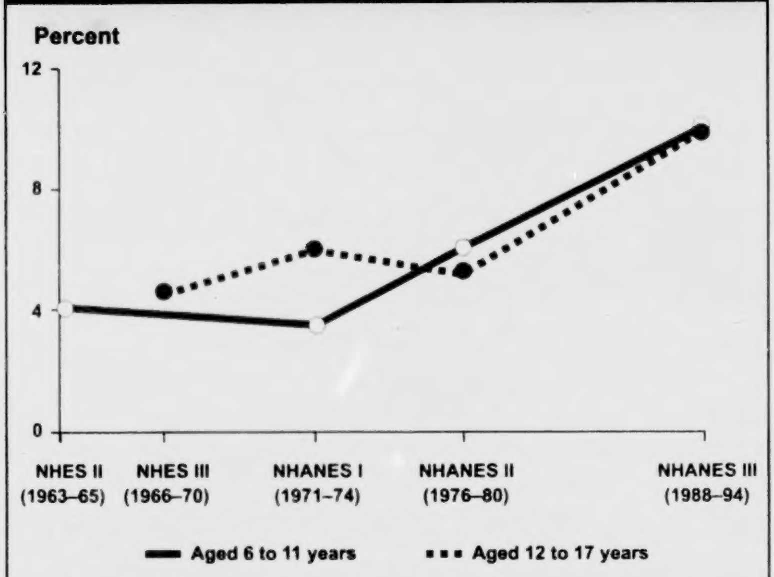
Issues and Trends

Nutrition is essential for growth and development, health, and well-being. Behaviors to promote health should start early in life with breastfeeding[1] and continue through life with the development of healthful eating habits. Nutritional, or dietary, factors contribute substantially to the burden of preventable illnesses and premature deaths in the United States.[2] Indeed, dietary factors are associated with 4 of the 10 leading causes of death: coronary heart disease (CHD), some types of cancer, stroke, and type 2 diabetes.[3] These health conditions are estimated to cost society over $200 billion each year in medical expenses and lost productivity.[4] Dietary factors also are associated with osteoporosis, which affects more than 25 million persons in the United States and is the major underlying cause of bone fractures in postmenopausal women and elderly persons.[5]

Many dietary components are involved in the relationship between nutrition and health. A primary concern is consuming too much saturated fat and too few vegetables, fruits, and grain products that are high in complex carbohydrates, dietary fiber, vitamins and minerals, and other substances conducive to health. The 1995 *Dietary Guidelines for Americans* recommend that, to stay healthy, persons aged 2 years and older should eat a variety of foods; maintain or improve one's weight by balancing food intake with physical activity; choose a diet that is plentiful in grain products, vegetables, and fruits, moderate in salt, sodium, and sugars, and low in fat, saturated fat, and cholesterol; and, if consuming alcoholic beverages, do so in moderation.[6] The Food Guide Pyramid, introduced in 1992, is an educational tool that conveys recommendations about the number of servings from different food groups each day and other principles of the *Dietary Guidelines for Americans.*[7]

The *Dietary Guidelines for Americans* also emphasize the need for adequate consumption of iron-rich and calcium-rich foods.[6] Although some progress has been made since the 1970s in reducing the prevalence of iron deficiency among low-income children,[8] much more is needed to improve the health of children of all ages and of women who are pregnant or are of childbearing age. Since the start of this decade, consumption of calcium-rich foods, such as milk products, has generally decreased and is especially low among teenaged girls and young women.[9] Because important sources of calcium also can include other foods with calcium occurring naturally or through fortification as well as dietary supplements, the current emphasis is on tracking total calcium intake from all sources.

Proportion of Overweight Children and Adolescents*
(By age for selected years, United States, 1963-94)



*Overweight is defined as at or above the gender- and age-specific 95th percentile of body mass index (BMI) based on a preliminary analysis of data from the year 2000 U.S. Growth Charts.

Source: Adapted from Troiano, R.P., and Flegal, K.M. Data as reported in: Overweight children and adolescents: Description, epidemiology, and demographics. *Pediatrics* 101;497-504, 1998.

demonstrated by an objective in this focus area. In addition, in recent years there has been a concerted effort to increase the folic acid intake of females of child-bearing age through fortification and other means to reduce the risk of neural tube defects.[10, 11] (See Focus Area 16. Maternal, Infant, and Child Health.)

In general, however, excesses and imbalances of some food components in the diet have replaced once commonplace nutrient deficiencies. Unfortunately, there has been an alarming increase in the number of overweight and obese persons.[12, 13] Overweight results when a person eats more calories from food (energy) than he or she expends, for example, through physical activity. This balance between energy intake and output is influenced by metabolic and genetic factors as well as behaviors affecting dietary intake and physical activity; environmental, cultural, and socioeconomic components also play a role.

When a body mass index (BMI) cut-point of 25 is used, nearly 55 percent of the U.S. adult population was defined as overweight or obese in 1988-94, compared to 46 percent in 1976-80.[12, 14, 15] In particular, the proportion of adults defined as obese by a BMI 30 or greater has increased from 14.5 percent to 22.5 percent.[12] A similar increase in overweight and obesity also has been observed in children above age 6 years in both genders and in all population groups.[16]

Many diseases are associated with overweight and obesity. Persons who are overweight or obese are at increased risk for high blood pressure, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea, respiratory problems, and some types of cancer. The health outcomes related to these diseases, however, often can be improved through weight loss or, at a minimum, no further weight gain. Total costs (medical costs and lost productivity) attributable to obesity alone amounted to an estimated $99 billion in 1995.[17]

Disparities

Disparities in health status indicators and risk factors for diet-related disease are evident in many segments of the population based on gender, age, race and ethnicity, and income. For example, overweight and obesity are observed in all population groups, but obesity is particularly common among Hispanic, African American, Native American, and Pacific Islander women. Furthermore, despite concerns about the increase in overweight and certain excesses in American diets, segments of the population also suffer from undernutrition, including persons who are socially isolated and poor. Over the years, the recognition of the consequences of food insecurity (limited access to safe, nutritious food) has led to the development of national measures and surveys to evaluate food insecurity and hunger and to the ability to assess disparities among different population groups. With food security and other measures of undernutrition, such as growth retardation and iron deficiency, disparities are evident based not only on income but also on race and ethnicity.

In addition, there are concerns about the nutritional status of persons in hospitals, nursing homes, convalescent centers, and institutions; persons with disabilities, including physically, mentally, and developmentally disabled persons in community settings; children in child care facilities; persons living on reservations; persons in correctional facilities; and persons who are homeless. National data about these population groups are currently unavailable or limited. Data also are insufficient to target the fastest growing segment of the population, the old and very old who live independently.

Opportunities

Establishing healthful dietary and physical activity behaviors needs to begin in childhood. Educating school-aged children about nutrition is important to help establish healthful eating habits early in life.[18, 19] Research suggests that parents who understand proper nutrition can help preschoolers choose healthful foods, but they have less influence on the choices of school-aged children.[20] Thus, the impact of nutrition education on health may be more effective if targeted directly at school-aged children. Unfortunately, a survey done in 1994 showed that only 69 percent of States and 80 percent of school districts required nutrition education for students in at least some grades from kindergarten through 12th grade.[21]

A well-designed curriculum that effectively addresses essential nutrition education topics can increase students' knowledge about nutrition, help shape appropriate attitudes, and help develop the behavioral skills students need to plan, prepare, and select healthful meals and snacks.[18, 22, 23] Curricula that encourage specific, healthful eating behaviors and provide students with the skills needed to adopt and maintain those behaviors have led to favorable changes in student dietary behaviors and cardiovascular disease risk factors.[18, 22, 23] In order to enhance the effectiveness of these lessons, however, nutrition course work should be part of the core curriculum for the professional preparation of teachers of all grades and should be emphasized in continuing education activities for teachers.

Topics considered to be essential at the elementary, middle and junior high, and senior high school levels include using the Food Guide Pyramid; learning the benefits of healthful eating; making healthful food choices for meals and snacks; preparing healthy meals and snacks; using food labels; eating a variety of foods; eating more fruits, vegetables, and grains; eating foods low in saturated fat and total fat more often; eating more calcium-rich foods; balancing food intake and physical activity; accepting body size differences; and following food safety practices.[18, 24] In addition, the following topics are considered to be essential at the middle/junior and senior high school levels: the *Dietary Guidelines for Americans;* eating disorders; healthy weight maintenance; influences on food choices such as families, culture, and media; and goals for dietary improvement.[18]

Nutrition education should be taught as part of a comprehensive school health education program, and essential nutrition education topics should be integrated into science and other curricula to reinforce principles and messages learned in the health units. Nutrition education is addressed within a school health education objective. (See Focus Area 7. Educational and Community-Based Programs.) In addition, students must have access to healthful food choices to further enhance the likelihood of adopting healthful dietary practices. For these reasons, monitoring students' eating practices at school is important.

Although health promotion efforts should begin in childhood, they need to continue throughout adulthood. In particular, public education about the long-term health consequences and risks associated with overweight and how to achieve and maintain a healthy weight is necessary. While many persons attempt to lose weight, studies show that within 5 years a majority of them regain the weight.[25] To maintain weight loss, healthful dietary habits must be coupled with decreased sedentary behavior and increased physical activity and become permanent lifestyle changes. (See Focus Area 22. Physical Activity and Fitness.) Additionally, changes in the physical and social environment may help persons maintain the necessary long-term lifestyle changes for both diet and physical activity.

Policymakers and program planners at the national, State, and community levels can and should provide important leadership in fostering healthful diets and physical activity patterns among Americans. The family and others, such as health care practitioners, schools, worksites, institutional food services and the media, can play a key role in this process. For example, registered dietitians and other qualified health care practitioners can improve health outcomes through efforts focused on nutrition screening, assessment, and primary and secondary prevention.

Food-related businesses can also help consumers achieve healthful diets by providing nutrition information for foods purchased in supermarkets, fast-food outlets, restaurants, and carryout operations. For example, the introduction of a new food label in 1993 has resulted in nutrition information on most processed packaged foods, along with credible health and nutrient content claims and standardized serving sizes.[26] While efforts were made in the 1990s to increase the availability of nutrition information, reduced-fat foods, and other healthful food choices in supermarkets, significant challenges remain on these fronts for away-from-home foods purchased at food service outlets. The importance of addressing these challenges is suggested by recent data indicating that nearly 40 percent of a family's food budget is spent on away-from-home food, including food from restaurants and fast-food outlets.[27] One analysis found that away-from-home foods are generally higher in saturated fat, total fat, cholesterol, and sodium and lower in dietary fiber, iron, and calcium than at-home foods.[27] Away-from-home sites include restaurants, fast-food outlets, school cafeterias, and vending machines. This study also suggested that persons either eat larger amounts when they eat out, eat higher calorie foods, or both.

Many of the 2010 objectives that address nutrition and overweight in the United States measure in some way the Nation's progress toward implementing the recommendations of the *Dietary Guidelines for Americans*. The recommendations for food and nutrient intake are not intended to be met every day but rather on average over a span of time. Although the 2010 dietary intake objectives address the proportion of the population that consumes a specified level of certain foods or nutrients, it is also important to track and report the average amount eaten by different population groups to help interpret progress on these objectives. Other objectives target aspects of undernutrition, including iron deficiency, growth retardation, and food security.

In summary, several actions are recognized as fundamental in achieving the 2010 objectives:

- Improving accessibility of nutrition information, nutrition education, nutrition counseling and related services, and healthful foods in a variety of settings and for all subpopulations.

- Focusing on preventing chronic disease associated with diet and weight, beginning in youth.
- Strengthening the link between nutrition and physical activity in health promotion.
- Maintaining a strong national program for basic and applied nutrition research to provide a sound science base for dietary recommendations and effective interventions.
- Maintaining a strong national nutrition monitoring program to provide accurate, reliable, timely, and comparable data to assess status and progress and to be responsive to unmet data needs and emerging issues.
- Strengthening State and community data systems to be responsive to the data users at these levels.
- Building and sustaining broad-based initiatives and commitment to these objectives by public and private sector partners at the national, State, and local levels.

Interim Progress Toward Year 2000 Objectives

Of the 27 nutrition objectives, targets for 5 have been met, including 2 related to the availability of reduced-fat foods and prevalence of growth retardation.[9, 28] The majority of the objectives have shown some progress, including those related to total fruit, vegetable, and grain product intake and total fat and saturated fat intake; availability of nutrition labeling on foods; breastfeeding; nutrition education in schools; and availability of worksite nutrition and weight management programs. For certain other objectives, such as consumer actions to reduce salt intake and home-delivered meals to elderly persons, there has been little or no progress. And for others, such as intake of calcium-rich food and overweight and obesity, movement has been away from the targets. In particular, the proportion of adults and children who are overweight or obese has increased substantially, and this represents one of the biggest challenges for Healthy People 2010.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Healthy People 2010—Summary of Objectives

Nutrition and Overweight

Goal: Promote health and reduce chronic disease associated with diet and weight.

Number	Objective
Weight Status and Growth	
19-1	Healthy weight in adults
19-2	Obesity in adults
19-3	Overweight or obesity in children and adolescents
19-4	Growth retardation in children
Food and Nutrient Consumption	
19-5	Fruit intake
19-6	Vegetable intake
19-7	Grain product intake
19-8	Saturated fat intake
19-9	Total fat intake
19-10	Sodium intake
19-11	Calcium intake
Iron Deficiency and Anemia	
19-12	Iron deficiency in young children and in females of childbearing age
19-13	Anemia in low-income pregnant females
19-14	Iron deficiency in pregnant females
Schools, Worksites, and Nutrition Counseling	
19-15	Meals and snacks at school
19-16	Worksite promotion of nutrition education and weight management
19-17	Nutrition counseling for medical conditions
Food Security	
19-18	Food security

Weight Status and Growth

19-1. Increase the proportion of adults who are at a healthy weight.

Target: 60 percent.

Baseline: 42 percent of adults aged 20 years and older were at a healthy weight (defined as a body mass index (BMI) equal to or greater than 18.5 and less than 25) in 1988-94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 20 Years and Older, 1988–94	**Healthy Weight**		
	19-1. Both Genders	**Females***	**Males***
		Percent	
TOTAL	42	45	38
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	34	29	40
White	42	47	37
Hispanic or Latino	DSU	DSU	DSU
Mexican American	30	31	30
Not Hispanic or Latino	DNA	DNA	DNA
Black or African American	34	29	40
White	43	49	38

Adults Aged 20 Years and Older, 1988–94	Healthy Weight		
	19-1. Both Genders	Females*	Males*
	Percent		
Age			
20 to 39 years	51	55	48
40 to 59 years	36	40	31
60 years and older	36	37	33
Family income level†			
Lower income (≤ 130 percent of poverty threshold)	38	33	44
Higher income (> 130 percent of poverty threshold)	43	48	37
Disability status			
Persons with disabilities	32	34	30
Persons without disabilities	41	45	36
Select populations			
Persons with arthritis	36	37	34
Persons without arthritis	43	47	40
Persons with diabetes	DNA	DNA	DNA
Persons without diabetes	DNA	DNA	DNA
Persons with high blood pressure	DNA	DNA	DNA
Persons without high blood pressure	DNA	DNA	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*Data for females and males are displayed to further characterize the issue.

†A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

19-2. Reduce the proportion of adults who are obese.

Target: 15 percent.

Baseline: 23 percent of adults aged 20 years and older were identified as obese (defined as a BMI of 30 or more) in 1988-94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 20 Years and Older, 1988–94	Obesity		
	19-2. Both Genders	Females*	Males*
	Percent		
TOTAL	23	25	20
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	30	38	21
White	22	24	20
Hispanic or Latino	DSU	DSU	DSU
Mexican American	29	35	24
Not Hispanic or Latino	DNA	DNA	DNA
Black or African American	30	38	21
White	21	23	20
Age (not age adjusted)			
20 to 39 years	18	21	15
40 to 59 years	28	30	25
60 years and older	24	26	21
Family income level†			
Lower income (≤ 130 percent of poverty threshold)	29	35	21
Higher income (> 130 percent of poverty threshold)	21	23	20
Disability status			
Persons with disabilities	30	38	21
Persons without disabilities	23	25	22

Adults Aged 20 Years and Older, 1988–94	Obesity		
	19-2. Both Genders	Females*	Males*
	Percent		
Select populations			
Persons with arthritis	30	33	27
Persons without arthritis	21	23	19
Persons with diabetes	DNA	DNA	DNA
Persons without diabetes	DNA	DNA	DNA
Persons with high blood pressure	DNA	DNA	DNA
Persons without high blood pressure	DNA	DNA	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*Data for females and males are displayed to further characterize the issue.

†A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

19-3. Reduce the proportion of children and adolescents who are overweight or obese.

Target and baseline:

Objective	Reduction in Overweight or Obese Children and Adolescents*	1988–94 Baseline†	2010 Target
		Percent	
19-3a.	Aged 6 to 11 years	11	5
19-3b.	Aged 12 to 19 years	10	5
19-3c.	Aged 6 to 19 years	11	5

*Defined as at or above the gender- and age-specific 95th percentile of BMI based on a preliminary analysis of data used to construct the year 2000 U.S. Growth Charts.

†Preliminary data.

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Children and Adolescents Aged 6 to 19 Years, 1988–94	Overweight or Obese 19-3a. Children Aged 6 to 11 Years	 19-3b. Children and Adolescents Aged 12 to 19 Years	 19-3c. Children and Adolescents Aged 6 to 19 Years
		Percent	
TOTAL	11	10	11
Race and ethnicity			
American Indian/Alaska Native	DSU	DSU	DNA
Asian/Pacific Islander	DSU	DSU	DNA
Asian	DNC	DNC	DNA
Native Hawaiian and other Pacific Islander	DNC	DNC	DNA
Black or African American	DNA	DNA	DNA
White	DNA	DNA	DNA
Hispanic or Latino	DSU	DSU	DNA
Mexican American	DNA	DNA	DNA
Not Hispanic or Latino	DNA	DNA	DNA
Black or African American	DNA	DNA	DNA
White	DNA	DNA	DNA
Gender			
Female	DNA	DNA	DNA
Male	DNA	DNA	DNA
Family income level*			
Lower income (≤ 130 percent of poverty threshold)	10	16	DNA
Higher income (> 130 percent of poverty threshold)	11	8	DNA
Disability status			
Persons with disabilities	DNA	DNA	DNA
Persons without disabilities	DNA	DNA	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: preliminary data.

*A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

Maintenance of a healthy weight is a major goal in the effort to reduce the burden of illness and its consequent reduction in quality of life and life expectancy. The

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selection of a BMI cut-point to establish the upper limit of the healthy weight range is based on the relationship of overweight or obesity to risk factors for chronic disease or premature death. A BMI of less than 25 has been accepted by numerous groups as the upper limit of the healthy weight range, since chronic disease risk increases in most populations at or above this cut-point.[14, 15, 29] The lower cut-point for the healthy weight range (BMI of 18.5) was selected to be consistent with national and international recommendations.[14, 15] Problems associated with excessive thinness (BMI less than 18.5) include menstrual irregularity, infertility, and osteoporosis. There is some concern that the increased focus on overweight may result in more eating disorders, such as bulimia and anorexia nervosa. (See Focus Area 18. Mental Health and Mental Disorders.) However, no evidence currently exists that suggests the increased focus on overweight has resulted in additional cases of eating disorders.

Overweight and obesity are caused by many factors. These factors reflect the contributions of inherited, metabolic, behavioral, environmental, cultural, and socioeconomic components. As weight increases, so does the prevalence of health risks. Simple, health-oriented definitions of overweight and obesity should be based on the amount of excess body fat at which health risks to individuals begin to increase. No such definitions currently exist. Most current clinical studies assessing the health effects of overweight rely on a measurement of body weight adjusted for height. BMI is the choice for many researchers and health professionals. While the relation of BMI to body fat differs by age and gender, it provides valid comparisons across racial and ethnic groups.[29] However, BMI does not provide information concerning body fat distribution, which has been identified as an independent predictor of health risk.[30] Thus, until a better surrogate for body fat is developed, BMI will be used to screen for overweight and obese individuals.

Interpretations of data about overweight and obesity have differed because criteria for these terms have varied over time, from study to study, and from one part of the world to another. National and international organizations now support the use of a BMI of 30 or greater to identify obesity.[14, 15] These BMI cut-points are only a guide to the identification and treatment of overweight and obese individuals and allow for the comparison across populations and over time. However, the health risks associated with overweight and obesity are part of a continuum and do not conform to rigid cut-points.

Overweight and obesity affect a large proportion of the U.S. population—55 percent of adults. Over two decades, the number of cases of obesity alone has increased more than 50 percent—from 14.5 percent of the adult population to 22.5 percent. Approximately 25 percent of U.S. adult females and 20 percent of U.S. adult males are obese.[12] Since weight management is difficult for most persons, the 2010 target of no more than 15 percent of adults aged 20 years and older having a BMI of 30 or more is ambitious. Nonetheless, the potential benefits from reduction in overweight and obesity are of considerable public health importance and deserve particular emphasis and attention. A concerted public effort will be needed to prevent further increases of overweight and obesity. Health care providers, health plans, and managed care organizations need to be alert to the development of overweight and obesity in their clients and should provide information concerning the associated risks. These groups need to provide guidance to help consumers address this health problem. To lose weight and keep it off, overweight persons will need long-term lifestyle changes in dietary and physical activity patterns that they can easily incorporate into their lives.

Patterns of healthful eating behavior need to begin in childhood and be maintained throughout adulthood. These patterns can be encouraged through nutrition education at schools and worksites that takes into account cultural and other factors influencing diet. Persons should be aware of the impact that away-from-home eating can have on weight management. In order to address physical activity needs, changes in the physical environment—such as access to walkways and bicycle paths—and the social environment—through social support and safe communities—will be needed to achieve long-term success.

There is much concern about the increasing prevalence of obesity in children and adolescents. Overweight and obesity acquired during childhood or adolescence may persist into adulthood and increase the risk for some chronic diseases later in life. Teenaged boys lose some fat accumulated before puberty during adolescence, but fat deposition continues in girls. Thus, without measures of sexual maturity, measures of body fat and body weight are difficult to interpret in preadolescents and adolescents. Therefore, the objective to reduce the prevalence of overweight and obesity among children and adolescents has a target set at no more than 5 percent and uses the gender- and age-specific 95th percentile of BMI from the year 2000 National Center for Health Statistics/Centers for Disease Control and Prevention (NCHS/CDC) growth charts. Interventions need to recognize that obese children also may experience psychological stress. The reduction of BMI in children and adolescents should be achieved by emphasizing physical activity and a properly balanced diet so that healthy growth is maintained. Additional research is needed to better define the prevalence and health consequences of overweight and obesity in children and adolescents and the implications of such findings for these persons as they become the next generation of adults.

19-4. Reduce growth retardation among low-income children under age 5 years.

Target: 5 percent.

Baseline: 8 percent of low-income children under age 5 years were growth retarded in 1997 (defined as height-for-age below the fifth percentile in the age-gender appropriate population using the 1977 NCHS/CDC growth charts;[31] preliminary data; not age adjusted).

Target setting method: Better than the best.

Data source: Pediatric Nutrition Surveillance System, CDC, NCCDPHP.

Low-Income Children Under Age 5 Years, 1997	Growth Retardation			
	19-4. Under Age 5 Years	Under Age 1 Year*	Aged 1 Year*	Aged 2 to 4 Years*
	Percent			
TOTAL	8	10	9	6
Race and ethnicity				
American Indian or Alaska Native	8	9	7	9
Asian or Pacific Islander	9	9	11	8
Asian	DNC	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC	DNC
White	DNC	DNC	DNC	DNC
Hispanic or Latino	7	7	8	5
Not Hispanic or Latino	DNC	DNC	DNC	DNC
Black or African American	9	15	10	5
White	8	10	9	6
Gender				
Female	8	10	8	6
Male	8	10	10	6
Disability status				
Children with disabilities	DNC	DNC	DNC	DNC
Children without disabilities	DNC	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Preliminary data; not age adjusted.

*Data for specific age groups under 5 years are displayed to further characterize the issue.

Retardation in linear growth in preschool children serves as an indicator of overall health and development and also may reflect the adequacy of a child's diet. Full growth potential may not be reached because of less than optimal nutrition, infectious diseases, chronic diseases, or poor health care. Inadequate maternal weight gain during pregnancy and other prenatal factors that influence birth weight also affect the prevalance of growth retardation among infants and young children.

Growth retardation is not a problem for the majority of young children in the United States. By definition, approximately 5 percent of healthy children are expected to be below the fifth percentile of height for age due to normal biologic variation. If more than 5 percent of a population group is below the fifth percentile, this suggests that full growth potential is not being reached by some children in that group. Among some age and ethnic groups of low-income children under age 5 years in the United States, up to 15 percent are below the fifth percentile. While progress has been made in reducing the prevalence of growth retardation among low-income Hispanic and Asian or Pacific Islander children, it remains especially high for African American children in the first year of life.

Interventions to improve children's linear growth potential include better nutrition; improvements in the prevention, diagnosis, and treatment of infectious and chronic diseases; and provision and use of adequate health services. Although the response of a population to interventions for growth retardation may not be as rapid as for iron deficiency or underweight, achievement of the objective by the year 2010 in all racial and ethnic, socioeconomic, and age subgroups should be possible. Special attention should be given to homeless children and those with special health care needs.

Food and Nutrient Consumption

19-5. Increase the proportion of persons aged 2 years and older who consume at least two daily servings of fruit.

Target: 75 percent.

Baseline: 28 percent of persons aged 2 years and older consumed at least two daily servings of fruit in 1994-96 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Continuing Survey of Food Intakes by Individuals (CSFII) (2-day average), USDA.

Persons Aged 2 Years and Older, 1994–96	Two or More Servings of Fruit Percent
TOTAL	28
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA
White	DNA
Hispanic or Latino	32
Mexican American	29
Other Hispanics	30
Not Hispanic or Latino	
Black or African American	24
White	27
Gender/Age	
Female	
2 years and older	26
2 to 5 years	43
6 to 11 years	26
12 to 19 years	23
20 to 39 years	20
40 to 59 years	26
60 years and older	35
Male	
2 years and older	29
2 to 5 years	46
6 to 11 years	27
12 to 19 years	22
20 to 39 years	23
40 to 59 years	28
60 years and older	40

Persons Aged 2 Years and Older, 1994–96	Two or More Servings of Fruit Percent
Household income level*	
Lower income (≤ 130 percent of poverty threshold)	23
Higher income (> 130 percent of poverty threshold)	29
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

19-6. Increase the proportion of persons aged 2 years and older who consume at least three daily servings of vegetables, with at least one-third being dark green or deep yellow vegetables.

Target: 50 percent.

Baseline: 3 percent of persons aged 2 years and older consumed at least three daily servings of vegetables, with at least one-third of these servings being dark green or deep yellow vegetables in 1994-96 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Continuing Survey of Food Intakes by Individuals (CSFII) (2-day average), USDA.

Persons Aged 2 Years and Older, 1994–96	Servings of Vegetables		
	19-6. Meets Both Recommendations	3 or More Daily Servings*	One-Third or More Servings From Dark Green or Deep Yellow Vegetables*
		Percent	
TOTAL	3	49	8
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNA	DNA	DNA
White	DNA	DNA	DNA
Hispanic or Latino	2	47	6
Mexican American	2	50	5
Other Hispanic	DSU	44	6
Not Hispanic or Latino	DNA	DNA	DNA
Black or African American	DNA	43	14
White	DNA	50	8
Gender/Age			
Female			
2 years and older	4	49	10
2 to 5 years	DSU	23	9
6 to 11 years	DSU	24	7
12 to 19 years	2	38	7
20 to 39 years	4	43	9
40 to 59 years	4	49	11
60 years and older	6	43	13
Male			
2 years and older	3	57	7
2 to 5 years	DSU	23	8
6 to 11 years	DSU	27	6
12 to 19 years	DSU	55	4
20 to 39 years	3	68	4

	Servings of Vegetables		
Persons Aged 2 Years and Older, 1994–96	**19-6. Meets Both Recommendations**	**3 or More Daily Servings***	**One-Third or More Servings From Dark Green or Deep Yellow Vegetables***
		Percent	
40 to 59 years	4	64	9
60 years and older	5	56	11
Household income level†			
Lower income (≤ 130 percent of poverty threshold)	3	42	8
Higher income (> 130 percent of poverty threshold)	4	50	8
Disability status			
Persons with disabilities	DNC	DNC	DNC
Persons without disabilities	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Aged adjusted to the year 2000 standard population.

*Data for number and type of daily servings are displayed to further characterize the issue.

†A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

19-7. Increase the proportion of persons aged 2 years and older who consume at least six daily servings of grain products, with at least three being whole grains.

Target: 50 percent.

Baseline: 7 percent of persons aged 2 years and older consumed at least six daily servings of grain products, with at least three being whole grains in 1994-96 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Continuing Survey of Food Intakes by Individuals (CSFII) (2-day average), USDA.

Persons Aged 2 Years and Older, 1994–96	Servings of Grains		
	19-7. Meets Both Recommendations	6 or More Daily Servings*	3 or More Servings From Whole Grain*
	Percent		
TOTAL	7	51	7
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNA	DNA	DNA
White	DNA	DNA	DNA
Hispanic or Latino	4	46	4
Mexican American	3	46	4
Other Hispanic	4	46	4
Not Hispanic or Latino	DNA	DNA	DNA
Black or African American	3	40	4
White	7	54	8
Gender/Age			
Female			
2 years and older	4	39	5
2 to 5 years	4	40	5
6 to 11 years	2	46	2
12 to 19 years	6	49	6
20 to 39 years	4	40	5
40 to 59 years	4	38	5
60 years and older	4	28	6
Male			
2 years and older	9	64	10
2 to 5 years	5	50	6
6 to 11 years	5	60	5
12 to 19 years	9	77	9
20 to 39 years	10	70	11

Persons Aged 2 Years and Older, 1994–96	Servings of Grains		
	19-7. Meets Both Recommendations	**6 or More Daily Servings***	**3 or More Servings From Whole Grain***
	Percent		
40 to 59 years	10	64	10
60 years and older	11	53	12
Household income level†			
Lower income (≤ 130 percent of poverty threshold)	4	44	5
Higher income (> 130 percent of poverty threshold)	7	53	8
Disability status			
Persons with disabilities	DNC	DNC	DNC
Persons without disabilities	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*Data for number and type of daily servings are displayed to further characterize the issue.

†A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

The 1995 *Dietary Guidelines for Americans* recommend that Americans choose a diet with plenty of grain products, vegetables, and fruits, which is also low in fat, saturated fat, and cholesterol and moderate in salt, sodium, and sugars.[6] Many Americans of all ages eat fewer than the recommended number of servings of grain products, vegetables, and fruits.[28] Vegetables (including legumes, such as beans and peas), fruits, and grains are good sources of complex carbohydrates (starch and dietary fiber), vitamins and minerals, and other substances that are important for good health. Some evidence from clinical studies suggests that water-soluble fibers from foods such as oat bran, beans, and certain fruits are associated with lower blood glucose and blood lipid levels.[12] Dietary patterns with higher intakes of vegetables (including legumes), fruits, and grains are associated with a variety of health benefits, including a decreased risk for some types of cancer.[12, 13, 14, 15, 16, 17]

The 1995 *Dietary Guidelines for Americans* recommend three to five servings from various vegetables and vegetable juices and two to four servings from various fruits and fruit juices, depending on calorie needs. Consumers can select from a plentiful supply of fresh, frozen, and canned products throughout the year. The *Dietary Guidelines for Americans* recommend that Americans choose dark green leafy and deep yellow vegetables and legumes often and prepare and serve vegetables with limited fat. In 1994-96, the average daily intake of fruits and vegetables was five servings, but only about 8 percent of vegetable servings were dark green or deep yellow, and only about 5 to 6 percent were legumes.[38] In contrast, fried potatoes accounted for about one-third (32 percent) of vegetable servings consumed by youth aged 2 to 19 years. Consumption of fruits and vegetables also is tracked at the State level and is discussed in *Tracking Healthy People 2010*.

The 1995 *Dietary Guidelines for Americans* recommend 6 to 11 daily servings of grain products, depending on calorie needs, with several of these from whole-grain breads and cereals. Although grain product consumption increased during the 1990s, consumption of whole-grain products remains very low. In 1994-96, for the population aged 2 years and older, the average daily intake of grain products was nearly seven servings, but only about 14 to 15 percent of grain servings were whole grain.[38] The guidelines also recommend that grain products be prepared with little or no fats and sugars; however, considerable amounts of fats and sugars are contributed to American diets by baked products such as cookies, cakes, and doughnuts.[39, 40] No State-level data on grain intakes are available for adults, adolescents, and children.

19-8. Increase the proportion of persons aged 2 years and older who consume less than 10 percent of calories from saturated fat.

Target: 75 percent.

Baseline: 36 percent of persons aged 2 years and older consumed less than 10 percent of daily calories from saturated fat in 1994-96 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Continuing Survey of Food Intakes by Individuals (CSFII) (2-day average), USDA.

Persons Aged 2 Years and Older, 1994–96	**Less than 10 percent of Calories From Saturated Fat** Percent
TOTAL	36
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA
White	DNA

Persons Aged 2 Years and Older, 1994–96	Less than 10 percent of Calories From Saturated Fat Percent
Hispanic or Latino	39
Mexican American	37
Other Hispanic	40
Not Hispanic or Latino	DNA
Black or African American	31
White	35
Gender/Age	
Female	
2 years and older	39
2 to 5 years	23
6 to 11 years	23
12 to 19 years	34
20 to 39 years	41
40 to 59 years	42
60 years and older	47
Male	
2 years and older	32
2 to 5 years	23
6 to 11 years	25
12 to 19 years	27
20 to 39 years	32
40 to 59 years	33
60 years and older	42
Household income level*	
Lower income (≤ 130 percent of poverty threshold)	33
Higher income (> 130 percent of poverty threshold)	36
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

19-9. Increase the proportion of persons aged 2 years and older who consume no more than 30 percent of calories from fat.

Target: 75 percent.

Baseline: 33 percent of persons aged 2 years and older consumed no more than 30 percent of daily calories from fat in 1994-96 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: Continuing Survey of Food Intakes by Individuals (CSFII) (2-day average), USDA.

Persons Aged 2 Years and Older, 1994–96	No More Than 30 Percent of Calories From Fat
	Percent
TOTAL	33
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA
White	DNA
Hispanic or Latino	36
Mexican American	33
Other Hispanic	38
Not Hispanic or Latino	DNA
Black or African American	26
White	33
Gender/Age	
Female	
2 years and older	36
2 to 5 years	35
6 to 11 years	34
12 to 19 years	36
20 to 39 years	38

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Persons Aged 2 Years and Older, 1994–96	No More Than 30 Percent of Calories From Fat
	Percent
40 to 59 years	33
60 years and older	40
Male	
2 years and older	30
2 to 5 years	33
6 to 11 years	30
12 to 19 years	30
20 to 39 years	29
40 to 59 years	28
60 years and older	34
Household income level*	
Lower income (≤ 130 percent of poverty threshold)	30
Higher income (> 130 percent of poverty threshold)	34
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

Both the *Dietary Guidelines for Americans* and the National Cholesterol Education and Prevention Program recommend a diet that contains less than 10 percent of calories from saturated fat and no more than 30 percent of calories from total fat.[6, 33, 41] This can be achieved by emphasizing foods from the grain products group, along with vegetables and fruits. Such a healthful diet also can include low-fat and lean foods from the milk group and the meat group. The increase of overweight and obesity in America indicates that more attention needs to be paid to serving size and total calorie content because a low-fat content does not, automatically, signify a lower calorie content.

The role of fat in the diet is complicated because different types of fatty acids have different effects on health. Evidence to date is complicated, but certain messages appear clear: Americans consume too much dietary fat in general, and too much of the fat consumed is from saturated fatty acids—the type associated with an increased risk for heart disease.

Strong evidence from human and animal studies shows that diets low in saturated fatty acids and cholesterol are associated with low risks and rates of coronary heart disease. Saturated fatty acids are the major dietary factors that raise blood LDL-cholesterol levels, increasing the risk for heart disease. Increasing evidence suggests that *trans*-fatty acids can also increase LDL-cholesterol levels, although less than saturated fatty acids.[42] Monounsaturated and polyunsaturated fatty acids do not raise blood cholesterol. Omega-3 polyunsaturated fatty acids found in many ocean fish appear to lower triglyceride levels but may cause a concurrent rise in LDL-cholesterol levels,[43] especially in persons with hypertriglyceridemia.

A 1989 National Research Council report[33] indicated that diets high in total fat were associated with a higher risk of several cancers, especially cancer of the colon, prostate, and breast, but noted that findings were inconsistent. A 1996 review of the evidence showed that the relationship between the amount and type of fat and the risk of cancer continues to be uncertain.[44] To help clarify the relationship between total dietary fat and the risk of cancer, a randomized clinical trial called the Women's Health Initiative has been started. Set to conclude in 2003, it is a multicenter trial designed to test several risk factors for chronic disease in U.S. females.[45] A major emphasis is to reduce fat to 25 percent of dietary calories to determine whether a low-fat diet has any effect on breast cancer risk.

The proportion of calories in the U.S. diet provided by total fat is about 33 percent, saturated fat is about 11 percent, and *trans*-fat is about 2.6 percent.[46] The primary sources of saturated fat are meats and dairy products that contain fat. Thus, nonfat and low-fat dairy products and lean meats are choices that can help reduce saturated fat intake. *Trans*-fatty acids are formed when vegetable oil is hydrogenated to become the major ingredient in margarine or shortening. *Trans*-fat-free margarines are available in most U.S. grocery stores. Other dietary sources of *trans*-fat are restaurant and fast-food fats, including frying fats; baked products, especially sweet bakery items; and some snack foods, such as chips.

The major vegetable sources of monounsaturated fatty acids include nuts, avocados, olive oil, canola oil, and high-oleic forms of safflower and sunflower seed oil. The major sources of polyunsaturated fatty acids are vegetable oils, including soybean oil, corn oil, and high-linoleic forms of safflower and sunflower seed oil and a few nuts, such as walnuts. Substituting monounsaturated and polyunsaturated fatty acids for saturated fatty acids can help lower health risks.

The proportion of all meals and snacks from away-from-home sources increased by more than two-thirds between 1977-78 and 1995, from 16 percent of all meals and snacks in 1977-78 to 27 percent of all meals and snacks in 1995.[27] Away-from-home food tends to have a higher saturated fat content, and persons tend to consume more calories when eating away from home than at home.[27] In 1995, the average total fat and saturated fat content of away-from-home foods, expressed as a percentage of calories, was 38 percent and 13 percent, respectively, compared with 32 percent and 11 percent for at-home foods.[27] Meals and snacks eaten by children at school had the highest saturated fat density of all food outlets. Thus, to help assess fat and saturated fat intake, as well as develop strategies to help children reduce the amount of fat they consume, the additional tracking of saturated fat and total fat intake from foods eaten away from home as well as at home is important.

19-10. Increase the proportion of persons aged 2 years and older who consume 2,400 mg or less of sodium daily.

Target: 65 percent.

Baseline: 21 percent of persons aged 2 years and older consumed 2,400 mg of sodium or less daily (from foods, dietary supplements, tap water, and salt use at the table) in 1988-94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Persons Aged 2 Years and Older, 1988–94 (unless noted)	Consume 2,400 mg of Sodium or Less Percent
TOTAL	21
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	25
White	20
Hispanic or Latino	DSU
Mexican American	25
Not Hispanic or Latino	DNA
Black or African American	25
White	20
Gender/Age	
Female	
2 years and older	32
2 to 5 years (not age adjusted)	64
6 to 11 years (not age adjusted)	26

Persons Aged 2 Years and Older, 1988–94 (unless noted)	**Consume 2,400 mg of Sodium or Less** Percent
12 to 19 years (not age adjusted)	29
20 years and older	30
Male	
2 years and older	9
2 to 5 years (not age adjusted)	50
6 to 11 years (not age adjusted)	16
12 to 19 years (not age adjusted)	4
20 years and older	5
Family income level*	
Lower income (≤ 130 percent of poverty threshold)	25
Higher income (> 130 percent of poverty threshold)	20
Disability status (aged 20 years and older)	
Persons with disabilities	18 (1991-94)
Persons without disabilities	16 (1991-94)
Select populations	
Females with high blood pressure	32
Females without high blood pressure	29
Males with high blood pressure	7
Males without high blood pressure	5

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

The 1995 *Dietary Guidelines for Americans* recommend choosing a diet moderate in salt and sodium (salt consists of both sodium and chloride). Most studies in diverse populations have shown that salt intake is linked to increasing levels of blood pressure.[6, 47, 48, 49] Persons who consume less salt or sodium have a lower risk of developing high blood pressure.[6] Data also show that high sodium intake may increase the amount of calcium excreted in the urine and therefore increase the body's need for calcium.[50]

Most Americans consume more sodium than is needed, and reduction of sodium or salt or both to no more than 2,400 mg sodium or 6 g salt per day is recommended by some authorities.[33, 47] Data from the Continuing Survey of Food Intakes by Individuals show that, even without including salt added at the table, both home foods and away-from-home foods provide excessive amounts of sodium.[27] Higher sodium intakes also tend to be associated with higher calorie intakes; for example, males, who consume more calories than females, also consume more sodium.[27]

Sodium occurs naturally in foods. However, most dietary salt or sodium is added to foods during processing or preparation, with smaller amounts added at the discretion of the consumer in the form of table salt or use of condiments such as soy sauce.[51, 52] Thus, in assessing dietary sodium consumption, both the sodium content of foods and estimates of the amount of salt added have been used. Other contributing sources of sodium are water, dietary supplements, and medications such as antacids.

19-11. Increase the proportion of persons aged 2 years and older who meet dietary recommendations for calcium.

Target: 75 percent.

Baseline: 46 percent of persons aged 2 years and older were at or above approximated mean calcium requirements (based on consideration of calcium from foods, dietary supplements, and antacids) in 1988-94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Persons Aged 2 Years and Older, 1988–94 (unless noted)	**Met Calcium Recommendations** Percent
TOTAL	46
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	30
White	49
Hispanic or Latino	DSU
Mexican American	44

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Persons Aged 2 Years and Older, 1988–94 (unless noted)	**Met Calcium Recommendations** Percent
Not Hispanic or Latino	DNA
Black or African American	30
White	50
Gender/Age	
Female	
2 years and older	36
2 to 8 years (not age adjusted)	79
9 to 19 years (not age adjusted)	19
20 to 49 years (not age adjusted)	40
50 years and older (not age adjusted)	27
Male	
2 years and older	56
2 to 8 years (not age adjusted)	89
9 to 19 years (not age adjusted)	52
20 to 49 years (not age adjusted)	64
50 years and older (not age adjusted)	35
Family income level*	
Lower income (≤ 130 percent of poverty threshold)	39
Higher income (> 130 percent of poverty threshold)	48
Disability status (aged 20 years and older)	
Persons with disabilities	44 (1991-94)
Persons without disabilities	44 (1991-94)

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

Calcium is essential for the formation and maintenance of bones and teeth.[32] The recommendations for adequate daily intakes of calcium are 500 mg for children aged 1 to 3 years, 800 mg for children aged 4 to 8 years, 1,300 mg for adolescents aged 9 to 18 years, 1,000 mg for adults aged 19 to 50 years, and 1,200 mg for adults aged 51 years and older.[53] Approximated mean calcium requirements are defined as 77 percent of the recommendations by the Institute of Medicine for adequate intakes of calcium.[53, 54] The bone mass achieved at full growth (peak bone mass) appears to be related to intake of calcium during childhood and adolescence.[33] Opinion is divided as to the age at which peak bone mass is achieved.

although most of the accumulation of bone mineral occurs in humans by about age 20 years. After persons reach their adult height, a period of consolidation of bone density continues until approximately age 30 to 35 years. A high peak bone mass is thought to be protective against fractures in later life.

Osteoporosis is a complex disorder caused by many contributing factors. (See Focus Area 2. Arthritis, Osteoporosis, and Chronic Back Conditions.) Regular exercise and a diet with enough calcium help maintain good bone health and reduce the risk of osteoporosis later in life. However, the ideal level of calcium intake for development of peak bone mass is unknown. For the most part, young children appear to meet the approximate calcium requirements. In contrast, the majority of adolescent and adult females do not meet the average requirements. This is in part because of their lower food consumption, as well as the lower consumption of milk products relative to soft drinks in American diets.[55] For example, in the period 1994 to 1996, the amount of soft drinks consumed was about twice that consumed in the late 1970s and surpassed consumption of fluid milk. Thus an increase in consumption of various sources of calcium is recommended for nearly all groups and especially for teenaged girls and women. In postmenopausal females—the group at highest risk for osteoporosis—estrogen replacement therapy under medical supervision is the most effective means to reduce the rate of bone loss and risk of fractures.[32]

The relationship between dietary calcium and blood pressure is uncertain. Results from studies that have used calcium supplements show a small reduction in systolic blood pressure in hypertensive individuals, with no significant reduction in diastolic blood pressure.[56] Among persons with normal blood pressure, there is no significant difference in blood pressure with calcium supplements.[57]

Dietary sources of calcium include milk and milk products such as cheese and yogurt, canned fish with soft bones such as sardines, dark green leafy vegetables such as kale and mustard or turnip greens, tofu made with calcium, tortillas made from lime-processed corn, calcium-enriched grain products, and other calcium-fortified foods and beverages.[6] In some locations, water is a source of calcium, but in amounts that cannot readily be determined. With current food selection practices, use of dairy products may constitute the difference between getting enough calcium in one's diet or not. Nonfat and low-fat dairy products are choices that help reduce the intake of saturated fat while still providing calcium, vitamin D, and other nutrients important for bone health. For those who have lactose intolerance, there is a range of lactose-reduced dairy products that provide calcium. Persons who do not (or cannot) consume and absorb adequate levels of calcium from dairy food sources may consider use of calcium-fortified foods, while those with clinical evidence of inadequate intake should receive professional advice on the proper type and dosage of calcium supplements. Calcium supplements come in different forms, including calcium-containing antacids.

Fluid milk (but not yogurt or cheese) is an excellent source of vitamin D, which is essential for calcium utilization. Vitamin D also is synthesized in the skin upon exposure to sunlight.

Iron Deficiency and Anemia

19-12. Reduce iron deficiency among young children and females of childbearing age.

Target and Baseline:

Objective	Reduction in Iron Deficiency*	1988–94 Baseline	2010 Target
		Percent	
19-12a.	Children aged 1 to 2 years	9	5
19-12b.	Children aged 3 to 4 years	4	1
19-12c.	Nonpregnant females aged 12 to 49 years	11	7

*Iron deficiency is defined as having abnormal results for two or more of the following tests: serum ferritin concentration, erythrocyte protoporphyrin, or transferrin saturation. Refer to *Tracking Healthy People 2010* for threshold values.

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Select Populations, 1988–94 (unless noted)	Iron Deficiency 19-12a. Aged 1 to 2 Years	 19-12b. Aged 3 to 4 Years	 19-12c. Females of Childbearing Age
		Percent	
TOTAL	9	4	11
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	10	2	15
White	8	3	10

Select Populations, 1988–94 (unless noted)	Iron Deficiency 19-12a. Aged 1 to 2 Years	 19-12b. Aged 3 to 4 Years	 19-12c. Females of Childbearing Age
		Percent	
Hispanic or Latino	DSU	DSU	DSU
Mexican American	17	6	19
Not Hispanic or Latino	DSU	DSU	DSU
Black or African American	10	2	15
White	6	1	8
Family income level*			
Lower income (≤ 130 percent of poverty threshold)	12	5	16
Higher income (> 130 percent of poverty threshold)	7	3	9
Disability status			
Persons with disabilities	DNC	DNC	4 (1991-94)
Persons without disabilities	DNC	DNC	12 (1991-94)

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

19-13. Reduce anemia among low-income pregnant females in their third trimester.

Target: 20 percent.

Baseline: 29 percent of low-income pregnant females in their third trimester were anemic (defined as hemoglobin < 11.0 g/dL) in 1996.

Target setting method: Better than the best.

Data source: Pregnancy Nutrition Surveillance System, CDC, NCCDPHP.

Low-Income Pregnant Females, Third Trimester, 1996	Anemia Percent
TOTAL	29
Race and ethnicity	
American Indian or Alaska Native	31
Asian or Pacific Islander	26
Asian	DNC

Low-Income Pregnant Females, Third Trimester, 1996	**Anemia** Percent
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNC
White	DNC
Hispanic or Latino	25
Not Hispanic or Latino	
Black or African American	44
White	24
Disability status	
Females with disabilities	DNC
Females without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

19-14. (Developmental) Reduce iron deficiency among pregnant females.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

The terms anemia, iron deficiency, and iron deficiency anemia often are used interchangeably, but are not equivalent. Iron deficiency ranges from depleted iron stores without functional or health impairment to iron deficiency with anemia, which affects the functioning of several organ systems. Iron deficiency anemia is more likely than iron deficiency without anemia to cause preterm births, low birth weight, and delays in infant and child development.[58, 59, 60] Iron deficiency (with and without anemia) in adolescent females has been associated with decreased verbal learning and memory.[61] The prevalence of iron deficiency anemia among children aged 1 to 2 years and 3 to 4 years and females aged 12 to 49 years in 1988 to 1994 was 3 percent, less than 1 percent, and 4 percent, respectively.

Anemia can be caused by many factors other than iron deficiency, including other nutrient deficiencies, infection, inflammation, and hereditary anemias. Anemia is used for monitoring risk of iron deficiency at the State and local levels because of the low cost and feasibility of measuring hemoglobin or hematocrit in the clinic setting.[62] Anemia is a good predictor of iron deficiency when the prevalence of iron deficiency is high, such as during the third trimester of pregnancy. It is not a good predictor of iron deficiency when the prevalence of iron deficiency is expected to be low, such as among white, non-Hispanic children aged 3 to 4 years in the United States. In that case, the majority of anemia is due to other causes.[8]

However, changes in the prevalence of anemia over time at State and local levels can be used to evaluate the effectiveness of programs to decrease the prevalence of iron deficiency.

Iron deficiency and anemia among young children declined during the 1970s in association with increased iron intake.[8] Although the prevalence of iron deficiency among low-income children continued to decline from 1976-80 to 1988-94, the prevalence of iron deficiency among all young children remained the same, and the prevalence of iron deficiency among females of childbearing age actually increased.[9] From 1979 to 1996, the prevalence of third trimester anemia among low-income pregnant females did not change.[63, 64]

Iron deficiency is highest among toddlers and among minority and low-income children.[65] Iron deficiency can be prevented among young children by teaching families about child nutrition, including promoting breastfeeding of infants, with exclusive breastfeeding for 4 to 6 months, the use of iron-fortified formulas when formulas are used; delayed introduction of cow's milk until 12 months of age; and age-appropriate introduction of iron-rich solid foods, such as iron-fortified infant cereals and pureed meats and introduction of foods that enhance iron absorption such as vitamin C-rich fruits, vegetables, or juices.[62]

Nonpregnant females of childbearing age are at increased risk for iron deficiency because of iron loss during menstruation coupled with inadequate intake of iron.[62] Pregnant females are also at increased risk because of the increased iron requirements of pregnancy.[62, 64] Consequently, an objective has been established to reduce the prevalence of anemia among low-income pregnant females in their third trimester. Although groups other than low-income females are considered at risk for iron deficiency during pregnancy, there are no nationally representative data on the prevalence of iron deficiency or iron deficiency anemia among pregnant females.

National data indicate that only one-fourth of all females of childbearing age (12 to 49 years) meet the U.S. recommended dietary allowance for iron (15 mg) through their diets.[66] Iron deficiency among females of childbearing age may be prevented by periodic anemia screening and appropriate treatment and by counseling them about better eating practices, such as selecting iron-rich foods, taking iron supplements during pregnancy, increasing consumption of foods that enhance iron absorption (for example, orange juice and other citrus products), and discouraging consumption of iron inhibitors (for example, coffee and tea) with iron-rich foods.[62] Some good sources of iron include meats, poultry, fish, leafy greens of the cabbage family, legumes, dry beans and peas, yeast-leavened whole wheat bread and rolls, and iron-enriched white bread, pasta, rice, and cereals.[6]

Schools, Worksites, and Nutrition Counseling

19-15. (Developmental) Increase the proportion of children and adolescents aged 6 to 19 years whose intake of meals and snacks at schools contributes proportionally to good overall dietary quality.

Potential data source: Continuing Survey of Food Intakes by Individuals (CSFII), USDA.

Students today have increased food options at school. Although students may understand that good nutrition and good health are connected, that understanding may not be reflected in their food choices and meal patterns. The U.S. Department of Agriculture (USDA) has established standards requiring schools to plan menus that meet the *Dietary Guidelines for Americans*, but these standards do not apply to à la carte foods; to foods sold in snack bars, school stores, and vending machines; or to foods students bring from home. Students' food choices are influenced by the total eating environment created by schools. This includes the types of foods available throughout the school, point-of-choice nutrition information in the cafeteria and around the school, nutrition education provided in the classroom, and nutrition promotions that reach families and affect the choices of foods brought to school.

Improving the quality of students' dietary intake in the school setting is important because, for many children, meals and snacks consumed at school make a major contribution to their total day's consumption of food and nutrients. National food consumption data collected in 1994 and 1995 show that meals and snacks consumed at schools had the highest saturated fat density of all food outlets.[27] School foods also had higher than recommended levels of sodium—as did other away-from-home foods and at-home foods. Nonetheless, these analyses also showed positive aspects of foods obtained from school. School foods had the highest calcium density of all sources and the highest dietary fiber density of all away-from-home sources. The establishment of an environment that supports a good overall diet would enable school nutrition and food services, in conjunction with students, their families, and other school employees, to make an important contribution to short- and long-term disease prevention and health promotion. In addition, such an environment would foster learning readiness (for example, by encouraging students to consume substantial breakfasts).[67, 68, 69]

19-16. Increase the proportion of worksites that offer nutrition or weight management classes or counseling.

Target: 85 percent.

Baseline: 55 percent of worksites with 50 or more employees offered nutrition or weight management classes or counseling at the worksite or through their health plans in 1998-99.

Target setting method: 55 percent improvement.

Data source: National Worksite Health Promotion Survey, Association for Worksite Health Promotion (AWHP).

Worksites, 1998–99 Worksite Size (number of employees)	Offer Nutrition or Weight Management Classes or Counseling		
	Worksite or Health Plan	Worksite	Health Plan
		Percent	
Total (50+)	55	28	39
50-99	48	21	39
100-249	51	29	37
250-749	59	44	42
750+	83	70	50

Worksite programs can reach large numbers of employees with information, activities, and services that encourage the adoption of healthy dietary and physical activity behaviors.[70] Employer-sponsored programs can be offered onsite or in partnership with community organizations. Examples of such programs include weight management classes, physical activity programs, lunchtime seminars, self-help programs, cooking demonstrations and classes, healthy food service and vending machine selections, point-of-purchase nutrition information, and flexible health benefits that include nutrition-related services.

A recent study of worksite health promotion programs found that specific interventions at the worksite resulted in employees choosing to reduce the amount of fat calories they consumed and eating more fruits, vegetables, and dietary fiber.[71] Worksite health promotion programs may reduce health care costs, including employer costs for insurance programs, disability benefits, and medical expenses.[72, 73]

If possible, nutrition education and weight management programs at the worksite should be part of a comprehensive health promotion program. In addition, employers could reimburse health promotion activities and provide company time for employees to participate in the programs.[74]

Worksite programs should be made available to the family members of employees and company retirees, as well as current employees. Also, these programs should be offered in a culturally and linguistically competent manner and any education materials provided should be culturally and linguistically appropriate.

19-17. Increase the proportion of physician office visits made by patients with a diagnosis of cardiovascular disease, diabetes, or hyperlipidemia that include counseling or education related to diet and nutrition.

Target: 75 percent.

Baseline: Counseling or education on diet and nutrition was ordered or provided for 42 percent of physician office visits that were related to the diagnosis of cardiovascular disease, diabetes, or hyperlipidemia in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Ambulatory Medical Care Survey (NAMCS), CDC, NCHS.

Persons With Specific Conditions, 1997	Physician Office Visits That Include Diet and Nutrition Counseling or Education			
	19-17. Any of the Three Conditions	Hyperlipidemia*	Cardiovascular Disease*	Diabetes*
	Percent			
TOTAL	42	65	36	48
Race and ethnicity				
American Indian or Alaska Native	DSU	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU	DSU
Asian	DNC	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC	DNC
Black or African American	46	DSU	40	54
White	41	64	35	47
Hispanic or Latino	DSU	DSU	DSU	DSU
Not Hispanic or Latino	DSU	DSU	DSU	DSU
Black or African American	DSU	DSU	DSU	DSU
White	DSU	DSU	DSU	DSU

Persons With Specific Conditions, 1997	Physician Office Visits That Include Diet and Nutrition Counseling or Education			
	19-17. Any of the Three Conditions	Hyperlipidemia*	Cardiovascular Disease*	Diabetes*
	Percent			
Gender				
Female	39	55	34	46
Male	44	73	38	49
Age				
20 to 44 years	45	75	37	49
45 to 64 years	41	62	36	47
65 years and older	33	44	32	45
Family income level†				
Lower income (≤ 130 percent of poverty threshold)	DNC	DNC	DNC	DNC
Higher income (> 130 percent of poverty threshold)	DNC	DNC	DNC	DNC
Disability status				
Persons with disabilities	DNC	DNC	DNC	DNC
Persons without disabilities	DNC	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*Data for separate conditions are displayed to further characterize the issue.

†A household income below 130 percent of poverty threshold is used by the Food Stamp Program.

Primary care providers are well positioned in the health care system to provide preventive services, including nutrition screening and assessment, referral, and counseling. For example, they can screen for age-specific and diagnosis-related nutrition risk factors as a part of routine patient contact. The public views physicians—and registered dietitians in particular—as credible sources of nutrition information.[75] Dietary assessment, counseling, and followup by physicians and qualified nutrition professionals are effective in reducing patient dietary fat intake and serum cholesterol.[76, 77, 78, 79] For many physicians, referring patients to qualified nutrition professionals for nutrition assessment, education, counseling on behavioral change, diet modification, and specialized nutrition therapies represents appropriate clinical practice.

Nutrition counseling by registered dietitians and other qualified nutrition professionals has been found to be cost effective for patients with hyperlipidemia[80, 81] and type 2 diabetes mellitus.[82] Nutrition services also are a critical component of improved health outcomes for many other diseases and conditions, including obesity, gastrointestinal and hepatic disease, renal disease, cancer, HIV/AIDS, pressure ulcers, burns and trauma, eating disorders, and prenatal care. A 1997 study that evaluated the cost of covering medical nutrition therapy under Medicare part B projected savings to the program of $11 million in 2001 and $65 million in 2004.[83, 84]

Food Security

19-18. Increase food security among U.S. households and in so doing reduce hunger.

Target: 94 percent.

Baseline: 88 percent of all U.S. households were food secure in 1995.

Target setting method: 6 percentage point improvement (50 percent decrease in food insecurity, consistent with the U.S. pledge to the 1996 World Food Summit).

Data sources: Current Population Survey, U.S. Department of Commerce, Bureau of the Census; National Food and Nutrition Survey (beginning in 2001), DHHS and USDA.

U.S. Households, 1995	Food Secure Percent
TOTAL	88
Race and ethnicity	
American Indian or Alaska Native	78
Asian or Pacific Islander	91
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	76
White	90
Hispanic or Latino	75
Mexican American	73
Not Hispanic or Latino	89
Black or African American	76
White	91

732

U.S. Households, 1995	**Food Secure** Percent
Household characteristics	
With children	83
With elderly persons	94
Lower income level (≤ 130 percent of poverty threshold)*	
All	69
With children (under age 18 years)	59
With elderly persons (aged 65 years and over)	85
Higher income level (> 130 percent of poverty threshold)*	
All	94
With children (under age 18 years)	91
With elderly persons (aged 65 years and over)	98
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*A household income below 130 percent poverty threshold is used by the Food Stamp Program.

Food security means that people have access at all times to enough food for an active, healthy life. It implies that people have nutritionally adequate and safe foods and sufficient household resources to ensure their ability to acquire adequate, acceptable foods in socially acceptable ways—that is, through regular marketplace sources and not through severe coping strategies like emergency food sources, scavenging, and stealing. Hunger in this context refers to the uneasy or painful sensation caused by a lack of food.

While the vast majority of Americans are food secure and have not experienced hunger, both food insecurity and hunger have remained a painful fact of life for too many Americans.[85, 86] The specific concern is with food insecurity and hunger resulting from inadequate household resources. Other sources of food insecurity (such as illness, child abuse and neglect, or loss of function or mobility) are not included in this definition. Food insecurity and hunger may coexist with malnutrition, but they are not the same thing nor even necessarily closely associated. Food insecurity and hunger, however, are believed to have harmful health and behavioral impacts in their own right.[87] These are of particular concern for pregnant women, children, elderly persons, and other nutritionally vulnerable groups.[88]

The United States is committed to increasing food security by working with local leaders as outlined in the U.S. Action Plan on Food Security, through USDA's

Community Food Security Initiative, and the Maternal and Child Health Bureau's Healthy Start.[89, 90]

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-3. Counseling about health behaviors

2. Arthritis, Osteoporosis, and Chronic Back Conditions

2-9. Cases of osteoporosis

3. Cancer

3-1. Cancer deaths

3-3. Breast cancer deaths

3-5. Colorectal cancer deaths

3-10. Provider counseling about preventive measures

4. Chronic Kidney Disease

4-3. Counseling for chronic kidney failure care

5. Diabetes

5-1. Diabetes education

5-2. Prevent diabetes

5-6. Diabetes-related deaths

7. Educational and Community-Based Programs

7-2. School health education

7-5. Worksite health promotion programs

7-6. Participation in employer-sponsored health promotion activities

7-10. Community health promotion programs

7-11. Culturally appropriate community health promotion programs

10. Food Safety

10-4. Food allergy deaths

10-5. Consumer food safety practices

11. Health Communication

11-4. Quality of Internet health information sources

12. Heart Disease and Stroke

12-1. Coronary heart disease (CHD) deaths

12-7. Stroke deaths

12-9. High blood pressure

12-11. Action to help control blood pressure

12-13. Mean total cholesterol levels

12-14. High blood cholesterol levels

16. Maternal, Infant, and Child Health

16-10. Low birth weight and very low birth weight
16-12. Weight gain during pregnancy
16-15. Spina bifida and other neural tube defects
16-16. Optimum folic acid
16-17. Prenatal substance exposure
16-18. Fetal alcohol syndrome
16-19. Breastfeeding

18. Mental Health and Mental Disorders

18-5. Eating disorder relapses

22. Physical Activity and Fitness

22-1. No leisure-time physical activity
22-2. Moderate physical activity
22-3. Vigorous physical activity
22-6. Moderate physical activity in adolescents
22-7. Vigorous physical activity in adolescents
22-9. Daily physical education in schools
22-13. Worksite physical activity and fitness

26. Substance Abuse

26-12. Average annual alcohol consumption

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Anemia: A condition in which the hemoglobin in red blood cells falls below normal. Anemia most often results from iron deficiency, but also may result from deficiencies of folic acid, vitamin B12, or copper, or from chronic disease, certain conditions, or chronic blood loss.

Body mass index (BMI): Weight (in kilograms) divided by the square of height (in meters), or weight (in pounds) divided by the square of height (in inches) times 704.5. Because it is readily calculated, BMI is the measurement of choice as an indicator of healthy weight, overweight, and obesity.

Calorie: Unit used for measuring the energy produced by food when metabolized in the body.

Cholesterol: A waxy substance that circulates in the bloodstream. When the level of cholesterol in the blood is too high, some of the cholesterol is deposited in the walls of the blood vessels. Over time, these deposits can build up until they narrow the blood vessels, causing atherosclerosis, which reduces the blood flow. The higher the blood cholesterol level, the greater is the risk of getting heart disease. Blood cholesterol levels of less than 200 mg/dL are considered desirable. Levels of 240 mg/dL or above are considered high and require further testing and possible intervention. Levels of 200-239 mg/dL are considered borderline. Lowering blood cholesterol reduces the risk of heart disease.

HDL (high-density lipoprotein) cholesterol: The so-called good cholesterol. Cholesterol travels in the blood combined with protein in packages called lipoproteins. HDL is thought to carry cholesterol away from other parts of the body back to the liver for removal from the body. A low level of HDL increases the risk for CHD, whereas a high HDL level is protective.

LDL (low-density lipoprotein) cholesterol: The so-called bad cholesterol. LDL contains most of the cholesterol in the blood and carries it to the tissues and organs of the body, including the arteries. Cholesterol from LDL is the main source of damaging buildup and blockage in the arteries. The higher the level of LDL in the blood, the greater is the risk for CHD.

Complex carbohydrate: Starch and dietary fiber.

Coronary heart disease (CHD): The type of heart disease due to narrowing of the coronary arteries.

Dietary fiber: Plant food components, including plant cell walls, pectins, gums, and brans that cannot be digested.

***Dietary Guidelines for Americans*:** A report published by the U.S. Department of Agriculture and U.S. Department of Health and Human Services that explains how to eat to maintain health. The guidelines form the basis of national nutrition policy and are revised every 5 years. This chapter refers to the 1995 guidelines.

Fats/fatty acids: Fats and fatty acids are hydrocarbon chains ending in a carboxyl group at one end that bond to glycerol to form fat. Fatty acids are characterized as saturated, monounsaturated, or polyunsaturated depending on how many double bonds are between the carbon atoms. Fatty acids supply energy and promote absorption of fat-soluble vitamins. Some fatty acids are "essential," because they cannot be made by the body.

Saturated fatty acids: Fatty acids with no double bonds between carbon atoms. Levels of saturated fatty acids are especially high in meat and dairy products that contain fat. Saturated fatty acids are linked to increased blood cholesterol levels and a greater risk for heart disease.

***Trans*-fatty acids:** Alternate forms of naturally occurring unsaturated fatty acids produced in fats as a result of hydrogenation, such as when vegetable oil becomes margarine or shortening. Trans-fatty acids also occur in milk fat, beef fat, and lamb fat. These fatty acids have been associated with increased blood cholesterol levels.

Unsaturated fatty acids: Fatty acids with one or more double bonds between carbon atoms. These fatty acids do not raise blood cholesterol levels.

Polyunsaturated: Fatty acids with more than one double bond between carbon atoms.

Monounsaturated: Fatty acids with one double bond between carbon atoms.

Food Guide Pyramid: A graphic depiction of USDA's current food guide that includes five major food groups in its "base" (grains, vegetables, fruits, milk products, meat, and meat substitutes) and a "tip" depicting the relatively small contribution that discretionary fat and added sugars should make in American diets. The Food Guide Pyramid provides information on the choices within each group and the recommended number of servings.

Food security: Access by all people at all times to enough food for an active, healthy life. It includes at a minimum (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways.

Food insecurity: Limited or uncertain availability of nutritionally adequate and safe foods or limited and uncertain ability to acquire acceptable foods in socially acceptable ways.

HDL-cholesterol: See cholesterol.

Hunger: The uneasy or painful sensation caused by a lack of food.

Hypertension: High blood pressure.

Hypertriglyceridemia: Elevated levels of triglycerides in the blood.

Linear growth: Increase in length or height.

Iron deficiency: Lack of adequate iron in the body to support and maintain functioning. It can lead to iron deficiency anemia, a reduction in the concentration of hemoglobin in the red blood cells due to a lack of iron supply to the bone marrow.

LDL-cholesterol: See cholesterol.

Medical nutrition therapy: Use of specific nutrition counseling and interventions, based on an assessment of nutritional status, to manage a condition or treat an illness or injury.

Metabolism: The sum total of all the chemical reactions that go on in living cells.

Nutrition: The set of processes by which nutrients and other food components are taken in by the body and used.

Obesity: A condition characterized by excessive body fat.

Osteoporosis: A bone disease characterized by a reduction in bone mass and a deterioration of the bone structure leading to bone fragility.

Overweight: Excess body weight.

Physical activity: Bodily movement that substantially increases energy expenditure.

Registered dietitian: A food and nutrition expert who has met the minimum academic and professional requirements to receive the credential "RD." Many States and Commonwealths also have licensing laws for dietitians and nutrition practitioners.

Sedentary behavior: A pattern of behavior that is relatively inactive, such as a lifestyle characterized by a lot of sitting.

Type 2 diabetes: The most common form of diabetes, which results from insulin resistance and abnormal insulin action. Type 2 diabetes was previously referred to as non-insulin-dependent diabetes mellitus (NIDDM) and adult-onset diabetes.

References

1. American Academy of Pediatrics Work Group on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics* 100(6):1035-1039, 1997.

2. Frazao, E. The High Costs of Poor Eating Patterns in the United States. In: Frazao, E. (ed.). *America's Eating Habits: Changes and Consequences*. Washington, DC: Economic Research Service, U.S. Department of Agriculture, AIB-750, April 1999.

3. National Center for Health Statistics (NCHS). Report of Final Mortality Statistics, 1995. *Monthly Vital Statistics Report* 45(11):supplement 2. National Center for Health Statistics, Centers for Disease Control and Prevention, June 12, 1997.

4. Frazao, E. The American diet: a costly problem. *Food Review* 19:2-6, January-April 1996.

5. National Institutes of Health. *NIH Consensus Statement: Optimal Calcium Intake*. June 6-8, 12(4), 1994.

6. U.S. Department of Agriculture (USDA), and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans*, 4th edition. USDA Home and Garden Bulletin No. 232. Washington, DC: the Department, December 1995.

7. USDA. *The Food Guide Pyramid*. USDA Home and Garden Bulletin No. 252. Washington, DC: the Department, 1992.

8. Yip, R. The changing characteristics of childhood iron nutritional status in the United States. In: Filer, Jr., L.J. (ed.). *Dietary Iron: Birth to Two Years*. New York: Raven Press, Ltd., 1989, 37-61.

9. NCHS. *Healthy People 2000 Review 1998-99*. DHHS Pub. No. (PHS) 99-1256. Hyattsville, MD: Public Health Service, U.S. Department of Health and Human Services, 1997.

10. U.S. Department of Health and Human Services. Recommendations for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects. *Morbidity and Mortality Weekly Report* 41:1-7, 1992.

11. Lewis, C.J.; Crane, N.T.; Wilson, D.B.; and Yetley, E.A. Estimated folate intakes: data updated to reflect food fortification, increased bioavailability, and dietary supplement use. *American Journal of Clinical Nutrition* 70:198-207, 1999.

12. Flegal, K.M.; Carroll, M.D.; Kuczmarski, R.J.; and Johnson, C.L. Overweight and obesity in the United States: Prevalence and Trends, 1960-1994. *International Journal of Obesity* 22(1):39-47, 1998.

13. Kuczmarski, R.J.; Carroll, M.D.; Flegal, K.M.; and Troiano, R.P. Varying body mass index cutoff points to describe overweight prevalence among U.S. adults: NHANES III (1988-1994). *Obesity Research* 5(6):542-548, 1997.

14. World Health Organization (WHO). *Obesity: Preventing and Managing the Global Epidemic. Report of a WHO Consultation on Obesity, Geneva, 3-5 June 1997*. Geneva: the Organization, 1998.

15. National Institutes of Health. Clinical Guideline on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults—The Evidence Report. *Obesity Research* 6(suppl.2):51S-209S, 1998.

16. Troiano, R.P., and Flegal, K.M. Overweight children and adolescents: description, epidemiology, and demographics. *Pediatrics* 101:497-504, 1998.

17. Wolf, A.M., and Colditz, G.A. Current estimates of the economic cost of obesity in the United States. *Obesity Research* 6(2):97-106, 1998.

18. Centers for Disease Control and Prevention (CDC). Guidelines for school health programs to promote lifelong healthy eating. *Mor-*

bidity and Mortality Weekly Report 45(RR-9):1-33, 1996.

19. Kelder, S.H.; Perry, C.L.; Klepp, K.I.; and Lytle, L.L. Longitudinal tracking of adolescent smoking, physical activity, and food choice behaviors. *American Journal of Public Health* 84(7):1121-1126, 1994.

20. Variyam, J.N.; Blaylock, J.; Lin, B.H.; Ralston, K.; and Smallwood, D. Mother's nutrition knowledge and children's dietary intakes. *American Journal of Agricultural Economics* 81(2), May 1999.

21. Collins, J.L.; Small, M.L.; Kann, L.; Pateman, B.C.; Gold, R.S.; and Kolbe, L.J. School health education. *Journal of School Health* 65(8):302-311, 1995.

22. Contento, I.; Balch, G.I.; Bronner, Y.L.; et al. Nutrition education for school-aged children. *Journal of Nutrition Education* 27(6):298-311, 1995.

23. Lytle, L., and Achterberg, C. Changing the diet of America's children: What works and why? *Journal of Nutrition Education* 27(5):250-260, 1995.

24. Food and Nutrition Service, U.S. Department of Agriculture. *Team Nutrition Strategic Plan*. Washington, DC: the Service, October, 1998.

25. NIH Technology Assessment Conference Panel. Methods for voluntary weight loss and control. Consensus Development Conference, March 30 to April 1, 1992. *Annals of Internal Medicine* 119(7.2):764-770, 1993.

26. Wilkening, V.L. FDA's regulations to implement the NLEA. *Nutrition Today* 13-20, September/October, 1993.

27. Lin, B.H.; Guthrie, J.; and Frazao, E. *Nutrient Contribution of Food Away from Home*. In: E. Frazao (ed.). America's Eating Habits: Changes and Consequences. Washington, DC: Economic Research Service, U.S. Department of Agriculture, AIB-750, April 1999.

28. Crane, N.T.; Hubbard, V.S.; and Lewis, C.J. National nutrition objectives and the Dietary Guidelines for Americans. *Nutrition Today* 33:49-58, 1998.

29. WHO Expert Committee. *Physical Status: The Use and Interpretation of Anthropometry*. Report of a WHO Expert Committee. (WHO Technical Report Series: 854). Geneva: the Organization, 1995.

30. Gallagher, D.; Visser, M.; Sepulveda, D.; Pierson, R.N.; Harris, T.; and Heymsfield, S.B. How useful is body mass index for comparison of body fatness across age, sex, and ethnic groups. *American Journal of Epidemiology* 143(3):228-239, 1996.

31. CDC. *Pediatric Nutrition Surveillance, 1997 full report*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 1998.

32. Public Health Service. *The Surgeon General's Report on Nutrition and Health*. DHHS Pub. No. (PHS) 88050210. Washington, DC: U.S. Department of Health and Human Services, 1988.

33. National Research Council. *Diet and Health: Implications for Reducing Chronic Disease Risk*. Washington, DC: National Academy Press, 1989.

34. U.S. Department of Health and Human Services, Food and Drug Administration. Notice of final rule: food labeling; health claims and label statements; dietary fiber and cardiovascular disease. *Federal Register*: 2552-2605, January 5, 1993.

35. U.S. Department of Health and Human Services, Food and Drug Administration. Notice of final rule: food labeling; health claims and label statements; dietary fiber and cancer. *Federal Register*: 2537-2552, January 5, 1993.

36. Chief Medical Officer's Committee on Medical Aspects of Food. *Nutritional aspects of the development of cancer*. London: Stationery Office, 1998. (Department of Health report on health and social subjects 48.)

37. World Cancer Research Fund in association with American Institute for Cancer Research. *Food, Nutrition and the Prevention of Cancer: A Global Perspective*. Washington, DC: the Fund, 1997.

38. USDA, Agricultural Research Service. Unpublished data from the 1994-96 Continuing Survey of Food Intakes by Individuals. February 1998.

39. Morton, J.F., and Guthrie, J.F. Changes in children's total fat intakes and their food sources of fat, 1989-91 versus 1994-95: Implications for diet quality. *Family Economics and Nutrition Review* 11(3):44-57, 1998.

40. Guthrie, J.F., and Morton, J.F. Food sources of added sweeteners in the diets of Americans. *Journal of the American Dietetic Association*, in press.

41. National Heart, Lung, and Blood Institute. *The Report of the Expert Panel on Population Strategies for Blood Cholesterol Reduction. National Cholesterol Education Program of the National*

Heart, Lung, and Blood Institute. Washington, DC: U.S. Department of Health and Human Services, 1990.

42. Judd, J.T.; Baer, D.J.; Clevidence, B.A.; Muesing, R.A.; Chen, S.C.; Westrate, J.A.; Meijer, G.W.; Wittes, J.; Lichtenstein, A.L.; Vilella-Bach, M.; and Schaefer, E.J. Effects of margarine compared with those of butter on blood lipid profiles related to cardiovascular disease risk factors in normolipemic adults fed controlled diets. *American Journal of Clinical Nutrition* 68(4):768-777, 1998.

43. Harris, W.S. N-3 fatty acids and serum lipoproteins: human studies. *American Journal of Clinical Nutrition* 65(suppl. 5):1645S-1654S, 1997.

44. Ip, C., and Carroll, K., eds. Proceedings of the Workshop on Individual Fatty Acids and Cancer. Washington, DC, June 4-5, 1996. *American Journal of Clinical Nutrition* 66 (suppl. 6):1505S-1586S, 1997.

45. Freedman, L.S.; Prentice, R.L.; Clifford, C.; Harlan, W.; Henderson, M.; and Rossouw, J. Dietary fat and breast cancer: where are we? *Journal of the National Cancer Institute* 85(10):764-765, 1993.

46. Allison, D.B.; Egan, S.K.; Barraj, L.M.; Caughman, C.; Infante, M.; and Heimbach, J.T. Estimated intakes of trans fatty and other fatty acids in the U.S. population. *Journal of the American Dietetic Association* 99(2):166-174, 1999.

47. National Heart, Lung, and Blood Institute. *Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure*. DHHS Pub. No. 98-4080. Washington, DC: U.S. Department of Health and Human Services, November 1997.

48. Elliott, P.; Stamler, J.; Nichols, R.; et al., for the Intersalt Cooperative Research Group. Intersalt revisited: further analyses of 24 hour sodium excretion and blood pressure within and across populations. *British Medical Journal* 312:1249-1253, 1966.

49. Stamler, J.; Stamler, R.; and Neaton, J.D. Blood pressure, systolic and diastolic, and cardiovascular risks: U.S. population data. *Archives of Internal Medicine* 153(5):598-615, 1993.

50. Kurtz, T.W.; Al-Bander, H.A.; and Morris, R.C. "Salt sensitive" essential hypertension in men: Is the Sodium Ion alone important? *New England Journal of Medicine* 317(17):1043-1048, 1987.

51. Mattes, R., and Donnelly, D. Relative contributions of dietary sodium sources. *Journal of the American College of Nutrition* 10(4):383-393, 1991.

52. James, W.P.T.; Ralph, A.; and Sanchez-Castillo, C.P. The dominance of salt in manufactured food in the sodium intake of affluent societies. *Lancet* 1(8530):426-429, 1987.

53. Institute of Medicine. *Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride*. Washington, DC: National Academy Press, 1997.

54. Life Sciences Research Office, Federation of American Societies for Experimental Biology. Prepared for the Interagency Board for Nutrition Monitoring and Related Research. *Third Report on Nutrition Monitoring in the United States*. Volume I. Washington, DC: U.S. Government Printing Office, 1995, 104-105.

55. Tippett, K., and Cleveland, L. How Current Diets Stack Up: Comparison with the Dietary Guidelines. In: Frazao, E. (ed.). *America's Eating Patterns: Changes and Consequences*. Washington, DC: Economic Research Service, U.S. Department of Agriculture, AIB-750, 1999.

56. Bucher, H.C.; Cook, R.J.; Guyatt, G.; Lang, J.D.; Cook, D.J.; Hatala, R.; and Hunt, D.L. Effects of dietary calcium supplementation on blood pressure. A meta-analysis of randomized controlled trials. *Journal of the American Medical Association* 275:1016-1022, 1996.

57. Allender, P.S.; Cutler, J.A.; Follman, D.; Cappuccio, F.P.; Pryer, J.; and Elliott, P. Dietary calcium and blood pressure: A meta-analysis of randomized clinical trials. *Annals of Internal Medicine* 124(9):825-829, 1996.

58. Idjradinata, P., and Pollitt, E. Reversal of developmental delays in iron-deficient anaemic infants treated with iron. *Lancet* 341(8836):1-4, 1993.

59. Lozoff, B.; Jimenez, E.; and Wolf, A.W. Long-term developmental outcome of infants with iron deficiency. *New England Journal of Medicine* 325(10):687-694, 1991.

60. Scholl, T.O.; Hediger, M.L.; Fischer, R.L.; and Shearer, J.W. Anemia vs iron deficiency: Increased risk of preterm delivery in a prospective study. *American Journal of Clinical Nutrition* 55(5):985-998, 1992.

61. Bruner, A.B.; Joffe, A.; Duggan, A.K.; Casella, J.F.; and Brandt, J. Randomized study of cognitive effects of iron supplementation in non-anaemic iron-deficient adolescent girls. *Lancet* 348(9033):992-996, 1996.

62. CDC. Recommendations to prevent and control iron deficiency in the United States. *Morbidity and Mortality Weekly Report* 47(RR-3):1-29, 1998.

63. Perry, G.S.; Yip, R.; and Zyrkowski, C. Nutritional risk factors among low-income pregnant U.S. women: The Centers for Disease Control and Prevention (CDC) Pregnancy Nutrition Surveillance System, 1979 through 1993. *Seminars in Perinatology* 19(3):211-221, 1995.

64. CDC. *Pregnancy nutrition surveillance, 1996 full report.* Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 1998.

65. Looker, A.C.; Dallman, P.R.; Carroll, M.D.; Gunter, E.W.; and Johnson, C. Prevalence of iron deficiency in the United States. *Journal of the American Medical Association* 277:973-976, 1997.

66. U.S. Department of Agriculture, Agricultural Research Service. Data tables: results from USDA's 1994-96 Continuing Survey of Food Intakes by Individuals and 1994-96 Diet and Health Knowledge Survey [online]. Riverdale, MD: U.S. Department of Agriculture, Agricultural Research Service, Beltsville Human Nutrition Research Center, December, 1997. Retrieved January 14, 1998 <http://www.barc.usda.gov/bhnrc/foodsurvey/home.htm>.

67. Devaney, B., and Stewart, E. *Eating Breakfast: Effects of the School Breakfast Program.* Washington, DC: USDA Food and Nutrition Service, 1998.

68. Murphy, J.M.; Pagano, M.E.; Nachmani, J.; Sperling, P.; Kane, S.; and Kleinman, R.E. The Relationship of School Breakfast to Psychosocial and Academic Functioning: Cross-sectional and Longitudinal Observations in an Inner-city School Sample. *Archives of Pediatric and Adolescent Medicine* 152(9):899-907, 1998.

69. Pollitt, E. Does breakfast make a difference at school? *Journal of the American Dietetic Association* 95(10):1134-1139, 1995.

70. Public Health Service. *Worksite Nutrition: A Guide to Planning, Implementation, and Evaluation,* 2nd edition. Washington, DC: The American Dietetic Association and Office of Disease Prevention and Health Promotion, Public Health Service, U.S. Department of Health and Human Services, 1993.

71. Sorensen, G.; Stoddard, A.; Hunt, M.K.; et al. The effects of a health promotion-health protection intervention on behavior change: the WellWorks Study. *American Journal of Public Health* 88(11):1685-1690, 1998.

72. Goetzel, R.Z.; Jacobson, B.H.; Aldana, S.G.; Vardell, K.; and Yee, L. Health care costs of worksite health promotion participants and non-participants. *Journal of Occupational and Environmental Medicine* 40(4):341-346, 1998.

73. Shephard, R.J. Employee health and fitness-state of the art. *Preventive Medicine* 12(5):644-653, 1983.

74. Felix, M.R.; Stunkard, A.J.; Cohen, R.Y.; and Cooley, N.B. Health Promotion at the Worksite. I. A process for establishing programs. *Preventive Medicine* 14(1):99-108, 1985.

75. American Dietetic Association. *The American Dietetic Association 1997 Nutrition Trends Survey.* Chicago: the Association, 1997.

76. Caggiula, A.W.; Christakis, G.; Farrand, M.; Hulley, S.B.; Johnson, R.; Lasser, N.; Stamler, J; and Widdowson, G. The multiple risk intervention trial (MRFIT). IV. Intervention on blood lipids. *Preventive Medicine* 10(4):443-475, 1987.

77. Geil, P.B.; Anderson, J.W.; and Gustafson, N.J. Women and men with hypercholesterolemia respond similarly to an American Heart Association step 1 diet. *Journal of the American Dietetic Association* 95(4):436-441, 1995.

78. Gambera, P.J.; Schneeman, B.O.; and Davis, P.A. Use of the Food Guide Pyramid and U.S. Dietary Guidelines to improve dietary intake and reduce cardiovascular risk in active-duty Air Force members. *Journal of the American Dietetic Association* 95(11):1268-1273.

79. Hebert, J.R.; Ebbeling, C.B.; Ockene, I.S.; and Ma, Y. A dietitian-delivered group nutrition program leads to reductions in dietary fat, serum cholesterol, and body weight: The Worcester Area Trial for Counseling in Hyperlipidemia (WATCH). *Journal of the American Dietetic Association* 99(5):544-552, May 1999.

80. McGehee M.M.; Johnson, E.Q.; Rasmussen, H.M.; et al. Benefits and costs of medical nutrition therapy by registered dietitians for patients with hypercholesterolemia. *Journal of the American Dietetic Association* 95:1041-1043, 1995.

81. Sikand, G. Medical nutrition therapy lowers serum cholesterol and saves medication costs in men with hypercholesteremia. *Journal of the American Dietetic Association* 98:889-894, 1998.

82. Franz, M.J.; Splett, P.L.; Monk, A.; Barry, B.; McClain, K.; Weaver, T.; Upham, P.; Bergenstal, R.; and Mazze, R.S. Cost-effectiveness of medical nutrition therapy provided by dietitians for person with non-insulin dependent diabetes mellitus. *Journal of the American Dietetic Association* 95(9):1018-1024, 1995.

83. Sheils, J.F.; Rubin, R.; and Stapleton, D.C. The estimated costs and savings of medical nutrition therapy: The Medicare population. *Journal of the American Dietetic Association* 99(4):428-435, 1999.

84. Johnson, R.K. The Lewin Group Study—What does it tell us and why does it matter? *Journal of the American Dietetic Association* 99(4):426-427, 1999.

85. Bickel, G.; Andrews, M.; and Carlson, S. The magnitude of hunger: In a new national measure of food security. *Topics in Clinical Nutrition* 13(4):15-30, 1998.

86. Food Research and Action Center. *Community Childhood Hunger Identification Project: A Survey of Childhood Hunger in the United States.* Volume 1. Washington, DC: the Center, 1995.

87. Kendall, A.; Olson, C.M.; and Frongillo, Jr., E.A. Validation of the Radimer/Cornell measures of hunger and food insecurity. *Journal of Nutrition* 125(11):2793-2801, 1995.

88. Foreign Agricultural Service, USDA. *U.S. Action Plan on Food Security: Solutions to Hunger.* Washington, DC: Foreign Agricultural Service, USDA, March 1999.

89. *USDA's Community Food Security Initiative Action Plan.* USDA Community Food Security Initiative. August, 1999.

90. Health Resources and Services Administration, Maternal and Child Health Bureau. *Community Outreach, The Healthy Start Initiative: A Community-Driven Approach to Infant Mortality Reduction.* Volume IV. Washington, DC: the Administration, 1996.

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Occupational Safety and Health

Lead Agency: Centers for Disease Control and Prevention

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Goal

Promote the health and safety of people at work through prevention and early intervention.

Overview

The toll of workplace injuries and illnesses is significant. Every 5 seconds a worker is injured in the United States.[1,2] Every 10 seconds a worker is temporarily or permanently disabled.[1,2] Each day, an average of 137 persons die from work-related diseases,[3,4] and an additional 17 die from injuries on the job.[5] Although youth (persons aged 18 years and under) represent only 2 percent of the total workforce, each year 74,000 require treatment in hospital emergency departments for work-related injuries, and 70 die of those injuries.[6] In 1996, an estimated 11,000 workers were disabled each day due to work-related injuries.[7] In 1996, the National Safety Council estimated that on-the-job injuries alone cost society $121 billion, representing the sum of lost wages, lost productivity, administrative expenses, health care, and other costs. The 1992 combined U.S. economic burden for occupational illnesses and injuries was an estimated $171 billion.[8]

Work-related injuries and illnesses include any injuries or illnesses incurred by persons engaged in work-related activities while on or off the worksite. This includes injuries and illnesses which occur during apprenticeships, vocational training, working in family businesses, and even volunteer work as fire fighters or emergency medical services (EMS) providers.

Issues

The Nation is poised to make significant improvements in the quality of life for all working people in the United States. The National Occupational Research Agenda (NORA), developed by the National Institute for Occupational Safety and Health (NIOSH) in partnership with more than 500 outside organizations and individuals, was released in April 1996 as a framework to guide occupational safety and health research into the 21st century. NORA partners include representatives from labor, industry, academia, State governments, and national professional organizations. The NORA process resulted in a consensus on the top 21 research priorities for occupational safety and health (see table).

Category	NORA Priority Research Areas[9]
Disease and Injury	Allergic and Irritant Dermatitis Asthma and Chronic Obstructive Pulmonary Disease Fertility and Pregnancy Abnormalities Hearing Loss Infectious Diseases Low Back Disorders Musculoskeletal Disorders of the Upper Extremities Traumatic Injuries
Work Environment and Workforce	Emerging Technologies Indoor Environment Mixed Exposures Organization of Work Special Populations at Risk
Research Tools and Approaches	Cancer Research Methods Control Technology and Personal Protective Equipment Exposure Assessment Methods Health Services Research Intervention Effectiveness Research Risk Assessment Methods Social and Economic Consequences of Workplace Illness and Injury Surveillance Research Methods

One of the 21 specific priority areas identified by the NORA process is intervention effectiveness research, a type of research aimed at finding out which prevention strategies effectively protect worker safety and health. This research will evaluate the impact of occupational prevention interventions, programs, and policies on safety and health outcomes across a broad spectrum of industries. Although measurable improvements in worker safety and health have been achieved, only a few interventions have been evaluated systematically.

Managers of public and private sector occupational safety and health programs face increasing demands to document program cost-effectiveness and impact on worker health. The lack of evidence about intervention effectiveness stymies the introduction of new programs and threatens the continuation of ongoing programs. Corporate safety and health programs, regulatory requirements and voluntary consensus standards, workers' compensation policies and loss-control programs, engineering controls, and educational campaigns are among the types of interventions that need to be developed, implemented, and evaluated. In addition to promoting worker safety and health, intervention programs can lead to increased productivity and save on long-term operating costs.

Because national data systems will not be available in the first half of the decade for tracking progress, five subjects of interest are not addressed in this focus area's objectives. These topics represent a research and data collection agenda for the coming decade and are related to a variety of activities. The first topic covers improvement in national workplace injury and illness surveillance by increasing the number of States that code work-relatedness of injuries and illnesses in a variety of data systems, including cancer registries, trauma registries, risk factor surveys, and health facility data (for example, emergency department visits, clinic visits, hospital discharge records). The second addresses the reduction of exposures that result in workers having blood lead concentrations of 10 µg/dL or greater of whole blood. The third involves increasing the proportion of health care facilities that appropriately protect workers by instituting effective prevention practices to reduce latex allergy (for example, low-protein, powder-free gloves; nonlatex gloves). The fourth is related to increasing the proportion of health care settings, correctional facilities, and homeless shelters that appropriately protect workers by implementing effective tuberculosis control programs (for example, administrative controls, work practice and engineering controls, employee training and skin testing, and where necessary personal respiratory protection). The fifth relates to increasing the proportion of agricultural tractors fitted with rollover protective structures.

Trends

A number of data systems and estimates exist to describe the nature and magnitude of occupational injuries and illnesses. These data systems have advantages as well as limitations. However, no national occupational chronic disease or death reporting system currently exists. Therefore, scientists, public health professionals and policymakers must rely on estimates of the magnitude of occupational disease generated from a number of data sources and published epidemiologic (or population-based) studies. Although these compiled estimates generally are thought to underestimate the true extent of occupational disease, they are considered to provide the best available data. Such compilations indicate that an estimated 50,000 to 70,000 workers die each year from work-related diseases.

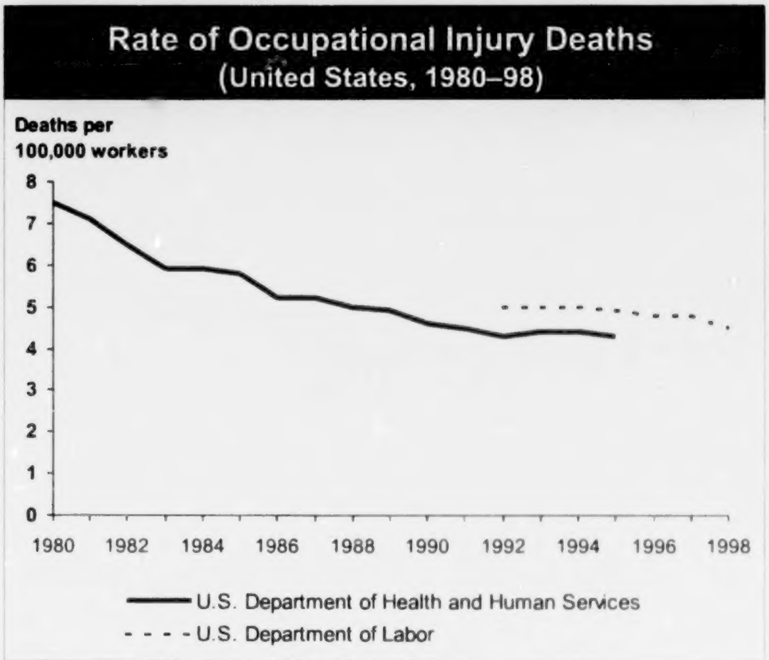
Data from the National Traumatic Occupational Fatalities Surveillance System (NTOF), based on death certificates from across the United States, demonstrate a general decrease in occupational death over the 16-year period from 1980 through 1995. The numbers and rates of fatal injuries from 1990 through 1995 remained relatively stable—at over 5,000 deaths per year and about 4.3 deaths per 100,000 workers. Motor vehicle-related fatalities at work, the leading cause of death for U.S. workers since 1980, accounted for 23 percent of deaths during the 16-year period. Workplace homicides became the second leading cause of death in 1990, surpassing machine-related deaths. Although the rankings of individual industry divisions have varied across the years, the largest number of traumatic occupational deaths consistently are found in construction, transportation and public utilities, and manufacturing. Industries with the highest traumatic occupational fatality rates per 100,000 workers are mining, agriculture, forestry and fishing, and construction.[10]

Rates of nonfatal injuries and illnesses have declined from a rate of 8.7 per 100 full-time workers in 1980 to 7.1 per 100 full-time workers in 1997.[11]

Disparities

Data systems that can routinely monitor disparities among population groups related to occupational injury and illness are not in place. NIOSH is working with partners and stakeholders in the occupational safety and health community to identify and address surveillance needs, including the need to track disparities.

Little is known about factors such as gender, genetic susceptibility, culture, and literacy that may increase the risk for occupational disease and injury. Occupational safety and health experts who worked to develop NORA agreed by consensus that many high-risk populations have been under served by the occupational safety and health research community, resulting in important unanswered questions about the profile of hazards these workers face, the number of cases of work-related injuries and illnesses, the mechanisms of these injuries and illnesses, and the optimal approach to preventing them. As a result, special populations is one of 21 NORA priority research areas which will examine the special challenges faced by different groups in the increasingly diverse work force.



Rate of Occupational Injury Deaths
(United States, 1980–98)

Sources: Census of Fatal Occupational Injuries, DOL, BLS, 1992–98; National Traumatic Occupational Fatalities Surveillance System, CDC, NIOSH, 1980–95.

Opportunities

The growing U.S. workforce, projected to be 147 million by the year 2005, also is changing. The population is increasingly diverse and more rapidly exposed to innovative work restructuring and new technologies. Evidence suggests that the way work is organized may directly affect worker health. Work organization broadly addresses the health effects of conditions of employment. It also encompasses special risks related to the overall economy, including the demands for productivity; the increasing presence in the workforce of children aged 16 to 17 years (2.1 percent increase projected each year from 1992 to 2005), women (47 percent of the workforce in 1997), minorities (becoming more racially diverse), and older workers (the aging of baby boomers); and the ongoing evolution from an industrial to a service economy.

The NORA strategic plan will ensure that research addresses the new, emerging work environment of the 21st century. Research translation, education, and outreach will ensure that labor, industry, academia, and national professional organizations have current information on how best to design prevention programs to protect worker safety and health.

Interim Progress Toward Year 2000 Objectives

For work-related injury deaths and nonfatal injuries, progress has been made toward meeting Healthy People 2000 objectives, including meeting several subobjectives (for construction and mining). The objective for reducing cases of hepatitis B infection among occupationally exposed workers has been exceeded, but the related goal for immunizing workers for hepatitis B fell short of the 2000 target. For several objectives, the Nation appears to be moving in the wrong direction as it approaches the millennium—a situation that can be attributed, in part, to several confounding factors, including improved surveillance, reporting changes, and improved diagnosis. Finally, a few Healthy People 2000 objectives cannot be tracked reliably for progress, and some objectives have low relative value for monitoring improved outcomes in worker safety and health (for instance, safety belt policies at work do not equate automatically with safety belt use). These objectives have been revised, replaced, or dropped from Healthy People 2010 objectives.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Occupational Safety and Health

Goal: Promote the health and safety of people at work through prevention and early intervention.

Number	Objective
20-1	Work-related injury deaths
20-2	Work-related injuries
20-3	Overexertion or repetitive motion
20-4	Pneumoconiosis deaths
20-5	Work-related homicides
20-6	Work-related assault
20-7	Elevated blood lead levels from work exposure
20-8	Occupational skin diseases or disorders
20-9	Worksite stress reduction programs
20-10	Needlestick injuries
20-11	Work-related, noise-induced hearing loss

20-1. Reduce deaths from work-related injuries.

Target and baseline:

Objective	Reduction in Deaths From Work-Related Injuries	1998 Baseline	2010 Target
		Deaths per 100,000 Workers Aged 16 Years and Older	
20-1a.	All industry	4.5	3.2
20-1b.	Mining	23.6	16.5
20-1c.	Construction	14.6	10.2
20-1d.	Transportation	11.8	8.3
20-1e.	Agriculture, forestry, and fishing	24.1	16.9

Target setting method: 29 percent improvement. (Better than the best will be used when data are available.)

Data source: Census of Fatal Occupational Injuries (CFOI), DOL, BLS.

Workers Aged 16 Years and Older, 1998	Deaths From Work-Related Injuries				
	20-1a. All Industry	20-1b. Mining	20-1c. Construction	20-1d. Transportation	20-1e. Agriculture, Forestry, and Fishing
	Rate per 100,000				
TOTAL	4.5	23.6	14.6	11.8	24.1
Race and ethnicity					
American Indian or Alaska Native	DSU	DSU	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU	DSU	DSU
Asian	DNC	DNC	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC	DNC	DNC
Black or African American	3.9	DNA	DNA	DNA	DNA
White	4.5	DNA	DNA	DNA	DNA
Hispanic or Latino	5.2	DNA	DNA	DNA	DNA

Workers Aged 16 Years and Older, 1998	Deaths From Work-Related Injuries				
	20-1a. All Industry	20-1b. Mining	20-1c. Construction	20-1d. Transportation	20-1e. Agriculture, Forestry, and Fishing
	Rate per 100,000				
Not Hispanic or Latino	DNA	DNA	DNA	DNA	DNA
Black or African American	DNA	DNA	DNA	DNA	DNA
White	DNA	DNA	DNA	DNA	DNA
Gender					
Female	0.8	DNA	DNA	DNA	DNA
Male	7.7	DNA	DNA	DNA	DNA
Family income level					
Poor	DNC	DNC	DNC	DNC	DNC
Near poor	DNC	DNC	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC	DNC	DNC
Disability status					
Persons with disabilities	DNC	DNC	DNC	DNC	DNC
Persons without disabilities	DNC	DNC	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

An average of 17 workers die from work-related injuries each day. These deaths are preventable. Public health efforts and resources can be targeted more effectively toward work-related injury prevention efforts, especially in those industries where the risk is greatest.

The NORA traumatic injury team has identified a number of research needs and priorities to address this issue. Specifically, the reduction of work-related injury deaths will require focused efforts to more fully identify and prioritize problems (injury surveillance), quantify and prioritize risk factors (analytic injury research), identify existing or develop new strategies to prevent occupational injuries (prevention and control), implement the most effective injury control measures (communication, dissemination, and technology transfer), and monitor the results of intervention efforts (evaluation). This approach will require the cooperation of many groups and agencies to provide the needed educational and outreach efforts, engineering controls, and enforcement of workplace safety regulations.

20-2. Reduce work-related injuries resulting in medical treatment, lost time from work, or restricted work activity.

Target and baseline:

Objective	Reduction in Work-Related Injuries Resulting in Medical Treatment, Lost Time From Work, or Restricted Activity	1997 Baseline	2010 Target
		Injuries per 100 Full-Time Workers Aged 16 Years and Older	
20-2a.	All industry	6.6	4.6
20-2b.	Construction	9.3	6.5
20-2c.	Health services	7.9	5.5
20-2d.	Agricultural, forestry, and fishing	7.9	5.5
20-2e.	Transportation	7.9	5.5
20-2f.	Mining	5.7	4.0
20-2g.	Manufacturing	8.9	6.2
20-2h.	Adolescent workers	4.8	3.4

Target setting method: 30 percent improvement. (Better than the best will be used when data are available.)

Data sources: Annual Survey of Occupational Injuries and Illnesses, DOL, BLS; National Electronic Injury Surveillance System (NEISS), CPSC.

Data for population groups currently are not collected.

In 1997, nearly 6.1 million workers suffered injuries that resulted in either lost time from work, medical treatment, or restricted work activity. This is a rate of 6.6 cases per 100 full-time workers and clearly represents a public health and occupational safety and health problem of significant proportions. Prevention efforts must be heightened to reduce the tremendous burden of these injuries on individual workers as well as society.

20-3. Reduce the rate of injury and illness cases involving days away from work due to overexertion or repetitive motion.

Target: 338 injuries per 100,000 workers.

Baseline: 675 injuries per 100,000 full-time workers due to overexertion or repetitive motion in 1997.

Target setting method: 50 percent improvement. (Better than the best will be used when data are available.)

Data source: Annual Survey of Occupational Injuries and Illnesses, DOL, BLS.

Data for population groups currently are not collected.

For occupational injuries and illnesses resulting in days away from work, in 1997 approximately 507,500 cases (32 percent of all cases) involved overexertion or repetitive motion. Included within this total were 297,300 injuries due to overexertion in lifting (52 percent affected the back) and 75,200 injuries or illnesses due to repetitive motion, including typing or key entry, repetitive use of tools, and repetitive placing, grasping, or moving of objects other than tools.[12] The rates per 100,000 workers were 588 (overexertion) and 87 (repetitive motion), respectively.

Research evidence suggests an association between musculoskeletal disorders and certain work-related physical factors when levels of exposure are high, especially in combination with exposure to more than one physical factor (for example, repetitive lifting of heavy objects in extreme or awkward postures). More than 3 million persons are employed in the industries with the highest numbers of cases involving days away from work because of overexertion in lifting and repetitive motion.[13] The number of workers affected can be reduced by continuing to focus national attention on prevention of this problem.

Strategies for reducing illness and injury due to overexertion or repetitive motion include increasing the number of States involved in control and evaluation activities and surveillance of musculoskeletal disorders; better support for State and community action to prevent and control musculoskeletal disorders; extending technical support and available engineering technology to industrial and service sectors to improve recognition and control of ergonomic hazards; establishing health care management strategies, as well as developing and validating standardized diagnostic criteria for early detection and treatment of musculoskeletal disorders for preventing impairment and disability; instituting ergonomic approaches at the design stage of work processes to factors that can lead to musculoskeletal problems; and increasing public awareness through media campaigns (for example, billboards and commercials) about the magnitude and severity of the problem, the need for early reporting, and early intervention to reduce disability, as well as providing education about interventions.

20-4. Reduce pneumoconiosis deaths.

Target: 1,900 deaths.

Baseline: 2,928 pneumoconiosis deaths among persons aged 15 years and older in 1997.

Target setting method: 10 percent fewer than the number of pneumoconiosis deaths projected for 2010 based on a 15-year trend (1982-97).

Data source: National Surveillance System for Pneumoconiosis Mortality NSSPM), CDC, NIOSH.

Pneumoconiosis deaths are preventable through effective control of worker exposure to occupational dusts. The ultimate public health goal is to eliminate all pneumoconiosis among the Nation's current and former workers. Although progress toward this goal has been made in recent decades, the continuing occurrence of new cases of pneumoconiosis highlights the mistaken conclusion of many who have declared this a disease of the past. It will be important to maintain attention to and, as appropriate, enhance control of occupational exposures to hazardous dusts. Pneumoconiosis deaths will be measured by tracking death counts rather than age-adjusted deaths rates, emphasizing the preventability of each death.

An effective prevention strategy to reduce deaths from all types of pneumoconiosis will necessitate a broad range of approaches. Disease, disability, and hazard surveillance, both at the Federal and State levels, are required to monitor progress toward prevention and to identify new and persisting high-risk problem areas. Effective dissemination of pneumoconiosis surveillance and prevention information will raise awareness and motivate preventive actions for high-risk worker populations. Informational materials specifically designed to target regulators, employers, employees, industrial hygiene professionals, health care professionals, legislators, and the general public also will contribute to elimination of pneumoconiosis.

20-5. Reduce deaths from work-related homicides.

Target: 0.4 deaths per 100,000 workers.

Baseline: 0.5 deaths per 100,000 workers aged 16 years and older were from work-related homicides in 1998.

Target setting method: 20 percent improvement. (Better than the best will be used when data are available.)

Data source: Census of Fatal Occupational Injuries (CFOI), DOL, BLS.

Data for population groups are not collected routinely.

An average of 20 workers die each week as a result of workplace homicides in the United States. The jobs where employees are at risk of being murdered in the workplace share a number of common factors, including interacting with the public, handling exchanges of money, working alone or in small numbers, and working late night or early morning hours. Workplace factors can be modified to reduce or eliminate the effects of these risk factors. Workers, employers, and others can launch workplace violence prevention efforts as a part of all comprehensive workplace safety and health initiatives.

Reducing the number of workplace homicides will require improved surveillance and analytic epidemiologic research as well as effectiveness research to assess engineering and other control strategies in various high-risk work settings. Additional education and outreach efforts also are necessary to inform workers, employers, occupational safety and health professionals, and others of the nature and magnitude of this problem and steps that can be taken to reduce the risk of workplace homicide.

20-6. Reduce work-related assault.

Target: 0.60 assaults per 100 workers.

Baseline: 0.85 assaults per 100 workers aged 16 years and older were work-related during 1987-92.

Target setting method: 29 percent improvement. (Better than the best will be used when data are available.)

Data source: National Crime Victimization Survey, U.S. Department of Justice, BJS.

Data for racial and ethnic population groups currently are not analyzed and are not collected for other population groups.

Each year between 1992 and 1996, more than 2 million persons were victims of a violent crime while they were at work or on duty. (For additional information regarding improved surveillance, see objective 20-5.)

20-7. Reduce the number of persons who have elevated blood lead concentrations from work exposures.

Target: 0 per 1 million.

Baseline: 93 per million persons aged 16 to 64 years (25 States) had blood lead concentrations of 25 µg/dL or greater in 1998.

Target setting method: Total elimination.

Data source: Adult Blood Lead Epidemiology and Surveillance Program, CDC, NIOSH.

Data for population groups currently are not collected.

Twenty-five of the 27 States in NIOSH's Adult Blood Lead Epidemiology and Surveillance (ABLES) Program reported 10,501 adults (aged 16 to 64 years) with blood lead levels of 25 µg/dL or greater in 1998. Industries in which workers have been occupationally exposed to lead include battery manufacturing, nonferrous foundries, radiator repair shops, lead smelters, construction, demolition, and firing ranges. Workers in sheltered workshops (where mentally and physically challenged adults work) also are at risk for lead exposures. Lead taken home from the workplace also can harm children and spouses. Lead exposures can occur in avocations such as making pottery and stained glass, casting ammunition and fishing weights, and renovation and remodeling projects.

In the 1978 general industry standard, the Occupational Safety and Health Administration (OSHA) advised that the maximum acceptable blood lead level was 40 µg/dL and that males and females planning to have children should limit their exposure to maintain a blood lead level less than 30 µg/dL (29 CFR 1910.1025).[14] Research studies on lead toxicity in humans indicate that compliance with the current OSHA lead standard should prevent the most severe symptoms of lead poisoning and some adverse reproductive effects in exposed workers. Nonetheless, the current OSHA standards fail to protect occupationally exposed males and females or their unborn children from all the adverse effects of lead, hence the 25 µg/dL cutoff in this objective.

The target can be achieved by continuing the efforts under way for the prevention of adult lead exposures, including interventions by States participating in NIOSH's ABLES Program, Council of State and Territorial Epidemiologists (CSTE) lead initiatives, OSHA's strategic initiative to reduce adult lead exposures, and voluntary industry initiatives such as those of the Lead Industries Association Incorporated and the Battery Council International.

20-8. Reduce occupational skin diseases or disorders among full-time workers.

Target: 47 new cases per 100,000.

Baseline: 67 new cases per 100,000 full-time workers aged 16 years and older had occupational skin diseases or disorders in 1997.

Target setting method: 30 percent improvement. (Better than the best will be used when data are available.)

Data source: Annual Survey of Occupational Injuries and Illnesses, DOL, BLS.

Data for population groups currently are not collected.

In 1997, occupational skin diseases or disorders (OSDs) constituted 13.5 percent of all occupational illnesses reported to the BLS, making OSDs the most common nontrauma-related occupational illness. Research on allergic and irritant dermatitis, the most common OSD, was identified as a NORA priority. In 1997, BLS data estimated a new case rate for OSDs of 67 per 100,000 workers, or 57,900 cases in the U.S. workforce. Because of survey limitations, the number of actual OSDs is estimated to be 10 to 50 times higher than the number reported by BLS.

The greatest number of cases of OSDs is seen in manufacturing, but the highest rate for diagnosis of new cases is seen in agriculture, forestry, and fishing. In the 1988 National Health Interview Survey (NHIS), the rate of new cases was 1.7 percent for occupational contact dermatitis (OCD) occurring in the preceding year. Projecting these results to the working population in the United States resulted in an estimate of 1.87 million persons with OCD. An analysis of workers' compensation claims reported an average annual claims rate for OSDs ranging from 12 to

108 per 100,000 employees. The total annual cost of OSDs is estimated to range from $222 million to $1 billion.

OSDs are preventable. Strategies for the prevention of OSDs include identifying allergens and irritants, substituting chemicals that are less irritating or allergenic, establishing engineering controls to reduce exposure, using personal protective equipment such as gloves and special clothing, using barrier creams, emphasizing personal and occupational hygiene, establishing educational programs to increase awareness in the workplace, and providing health screening. A combination of several interventions, which included providing advice on personal protective equipment and educating the workforce about skin care and exposures, have proved to be beneficial for workers. Primary and secondary prevention programs that include health promotion or public awareness campaigns and education or disease awareness programs can successfully be directed towards workers in high-risk industries.

20-9. Increase the proportion of worksites employing 50 or more persons that provide programs to prevent or reduce employee stress.

Target: 50 percent.

Baseline: 37 percent of worksites with 50 or more employees provided worksite stress reduction programs in 1992.

Target setting method: 35 percent improvement.

Data sources: National Survey of Worksite Health Promotion Activities, OPHS, ODPHP; National Health Interview Survey (NHIS), CDC, NCHS.

Job stress has been identified as a significant risk factor for a number of health problems, including cardiovascular disease, musculoskeletal disorders, and workplace injuries. Research indicates that up to one-third of all workers report high levels of stress on the job. Worksite programs to reduce stress tend to adopt either stress management (for example, helping workers cope with current levels of stress) or primary prevention (for example, altering sources of stress through job redesign). Although many of these programs have been found to be effective in reducing levels of stress, additional knowledge is needed regarding which occupations are especially prone to the effects of stress, which aspects of organizational change in today's workplace pose the greatest risk of job stress, and what interventions are most useful to control these risks. The NORA Work Organization Team is committed to identifying factors that contribute to job stress and psychological strain, as well as the prevention of these disorders. Definitive research is needed to clarify the relationship between psycho social stressors associated with work organization and safety and health concerns, including job stress. Responsibility for implementing worksite programs lies with industry and industry associations, although worker representatives and labor groups should be involved in the design and implementation of worksite stress-reduction programs.

The baseline has been set using the 1992 ODPHP survey which collected worksite data from the private sector and may not accurately reflect the practices of public sector organizations. The proportion of people who reported participating in stress management programs in the private and public sectors was 40 percent according to the 1994 NHIS data and may indicate that more worksite programs are offered in the public sector. NIOSH currently is planning data collection efforts to better understand stress prevention activities in both public and private workplace settings.

20-10. Reduce occupational needlestick injuries among health care workers.

Target: 420,000 annual needle-stick exposures.

Baseline: 600,000 occupational needle-stick exposures to blood among health care workers in 1996.

Target setting method: 30 percent improvement. (Better than the best will be used when data are available.)

Data sources: National Surveillance System for Health Care Workers, CDC, NCID, NCHSTP, NIP, NIOSH.

Needlestick injuries are a serious concern for the approximately 7 million health care workers in the United States, because they pose the greatest risk of occupational transmission of bloodborne viruses, for example, HIV, hepatitis B, and hepatitis C. Approximately 600,000 to 800,000 needlestick injuries occur annually, mostly among nursing staff; however, laboratory staff, physicians, housekeepers, and other health care workers also are injured. As of June 1999, a cumulative total of 55 documented cases and 136 possible cases of occupational transmission of HIV have occurred among health care workers. In 1995, an estimated 800 health care workers became infected with the hepatitis B virus. The number of health care workers who have acquired the hepatitis C virus from an occupational exposure is unknown; however, approximately 2 to 4 percent of the 36,000 acute HCV infections in 1996 were thought to be in health care workers after an occupational exposure. Also, the emotional impact of a needlestick can be severe and long lasting, even when a serious disease is not transmitted.

Although the new cases of hepatitis C virus (HCV) infection decreased in the 1990s, 36,000 persons in the United States are still infected each year (1996), and approximately 3.9 million persons are currently infected with HCV.[15] Of these infected persons, an estimated 2 to 4 percent are health care workers occupationally exposed to blood due to needlestick injuries. HIV also can be transmitted in this fashion.

Many of these exposures are preventable with currently available technology. Two studies that evaluated safety devices, ongoing surveillance of occupational injuries, and consultation with experts in occupational safety and injury prevention indicate that at least a 30 percent reduction can be achieved with new technologies and changes in technique. The use of engineering controls is an important priority in sharps injury prevention efforts. However, implementation of devices with safety features is only one component of a comprehensive program to achieve significant declines in sharps injuries. Such an approach includes modification of hazardous work practices, administrative changes to address needle hazards in the environment, safety education and awareness, and feedback on safety improvements.

20-11. (Developmental) Reduce new cases of work-related, noise-induced hearing loss.

Potential data source: Annual Report on Occupational Workplace Injury, Illness and Fatalities Statistics. U.S. Department of Labor, Bureau of Labor Statistics.

Related Objectives From Other Focus Areas

14. Immunization and Infectious Diseases

14-3. Hepatitis B in adults and high risk populations

14-28. Hepatitis B vaccination among high risk groups

27. Tobacco Use

27-11. Worksite smoking policies

27-12. Smoke-free indoor air laws

28. Vision and Hearing

28-8. Occupational eye injury

28-16. Hearing protection

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K)

Asbestosis: A type of occupational dust disease of the lung caused by microscopic asbestos fibers.

Acoustic trauma: Hearing loss that is caused by a one-time exposure to a very loud noise, such as a gun shot or blast overpressure. A portion of the hearing loss my be temporary, but a portion will be permanent.

Blood lead level (BLL): The concentration of lead in a sample of blood. This concentration is usually expressed in micrograms per deciliter (µg/dL) or micromoles per liter (µmol/L). One µg/dL is equal to 0.048 µmol/L.

Byssinosis: A type of occupational dust disease of the lung most often caused by cotton dust.

Coal workers' pneumoconiosis: A type of occupational dust disease of the lung caused by coal mine dust.

Ergonomic hazards: Factors or exposures that may adversely affect health and are related to the interaction between persons and their total working environment, including the organization of work, tools, equipment, and the social and behavioral elements of the workplace. These hazards also can apply to work performance capabilities and limitations of workers.

Hyperacusis: Abnormal sensitivity to everyday sound levels or noises, often sensitivity to higher pitched sounds, in the presence of essentially normal hearing and often accompanied by tinnitus. Hyperacusis often follows exposures to intense high-level sounds, such as overpressures from automobile air bag deployments or gun fire.

Musculoskeletal disorders: Conditions that involve the soft tissues of the body, including muscles, tendons, nerves, cartilage, and other supporting structures. The term usually refers to conditions of the large joints, including the neck, shoulder, elbow, hand and wrist, back, and knee.

National Occupational Research Agenda (NORA): A collaboration of the National Institute for Occupational Safety and Health (NIOSH) and its public and private partners to provide a framework to guide occupational safety and health research through the next decade.

Natural rubber latex allergy: An immediate hypersensitivity reaction to one or more natural rubber latex proteins that can result in a wide spectrum of signs and symptoms, including skin rashes; hives or wheals; flushing; itching; nasal, eye, or sinus problems; asthma; and, rarely, anaphylaxis (shock).

Noise-induced hearing loss: Hearing loss caused by repeated exposures to sounds at various loudness levels over an extended period of time. The resulting permanent hearing loss is the cumulation of many temporary hearing losses and is insidious, often unnoticed by the sufferer until listening and communication are impaired.

Occupational dusts: Dusts associated with industrial processes and other work activities.

Occupational skin disease or disorder (OSD): An abnormal skin condition caused by exposure to factors associated with employment. Examples include contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; chrome ulcers; and chemical burns or inflammations.

Pneumoconiosis: A major category of lung disease caused by breathing in certain types of occupational dusts. The dust deposited in the lung can result in inflammation and scarring, with associated respiratory symptoms, reduced lung function, and disability. A number of types of dust (for example, asbestos, silica, or coal mine dust) are known to cause pneumoconiosis.

Repetitive motion injury: As reported to the Bureau of Labor Statistics (BLS), a disorder due to repetitive motion, or musculoskeletal disorders of the upper extremity associated with workplace exposures to a combination of repetitive, forceful exertions and constrained or extreme postures. The term "repetitive motion injury" is no longer favored and has been replaced by "work-related musculoskeletal disorder" by the International Committee on Occupational Health (ICOH) Musculoskeletal Subcommittee. Back disorders are separately reported to the BLS as "disorders due to overexertion."

Silicosis: A type of occupational dust disease of the lung caused by crystalline silica dust.

Work-related injury (fatal or nonfatal): Any injury incurred by a worker while on or off the worksite but engaged in work-related activities. Work-related injuries may be unintentional or intentional (that is, homicide and assault). The term includes apprenticeships, vocational training, working in a family business, and work as a volunteer firefighter or emergency medical services (EMS) provider. Injuries incurred during work-related travel are included, but injuries incurred during routine commuting to or from work are not included.

Work-related musculoskeletal disorder: A condition involving the soft tissues of the body, including muscles, tendons, nerves, cartilage, and other supporting structures, that are caused by exposure to work-related factors. The term usually refers to conditions of the large joints, including the neck, shoulder, elbow, hand and wrist, back, and knee.

References

1. Bureau of Labor Statistics (BLS). Work injuries and illnesses by selected characteristics, 1993. *BLS News* Publication 95-142, April 26, 1995.

2. BLS. Workplace injuries and illnesses in 1994. *BLS News* Publication 95-508, December 15, 1995.

3. Centers for Disease Control and Prevention (CDC). National Occupational Research Agenda. *Morbidity and Mortality Weekly Report* 45:445-446, 1996.

4. CDC. Clarification. *Morbidity and Mortality Weekly Report* 45:495, 1996.

5. BLS. *National Census of Fatal Occupational Injuries, 1998*. USDL 99-208, August 4, 1999.

6. NIOSH. Unpublished

759

NEISS data, 1999.

7. National Safety Council. Accident Facts, 1998. Itaska, IL: the Council, 1999.

8. Leigh, J.P.; Markowitz, S.B.; Fahs, M.; Shin, C.; and Landrigan, P. Occupational Injury and Illness in the United States: Estimates of Costs, Morbidity, and Mortality. *Archives of Internal Medicine* 157:1557-1568, 1997.

9. National Institute for Occupational Safety and Health (NIOSH). *National Occupational Research Agenda*. Pub. No. 96-115. Cincinnati, OH: the Institute, 1996.

10. National Traumatic Occupational Fatalities Surveillance System, CDC, NIOSH.

11. Bureau of Labor Statistics. Workplace Injuries and Illnesses in 1997. Retrieved November 22, 1999. <www.146.142.4.23.pub.news.release/osh.txt>.

12. Bureau of Labor Statistics. Retrieved November 22, 1999. <www.stats.bls.gov>

13. NIOSH. Musculoskeletal Disorders and Workplace Factors—A Critical Review of Epidemiologic Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremity, and Lower Back. Pub. No. 97-141. Washington, DC: the Institute.

14. U.S. Department of Labor, Occupational Safety and Health Administration. Final standard for occupational exposure to lead. *Federal Register* 43:52952-53014, 1978.

15. McQuillan, G.M.; Alter, M.J.; Lambert, S.B.; and Margolis, H.S.; Rizzetto, M.; Purcell, R.H.; Gerin, J.L.; and Verme, G. (eds.). A population-based serologic study of hepatitis C virus infection in the United States. In: *Viral Hepatitis and Liver Disease*. 1997, 266-270.

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Oral Health

Co-Lead Agencies: Centers for Disease Control and Prevention;
Health Resources and Services Administration;
National Institutes of Health

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Goal

Prevent and control oral and craniofacial diseases, conditions, and injuries and improve access to related services.

Overview

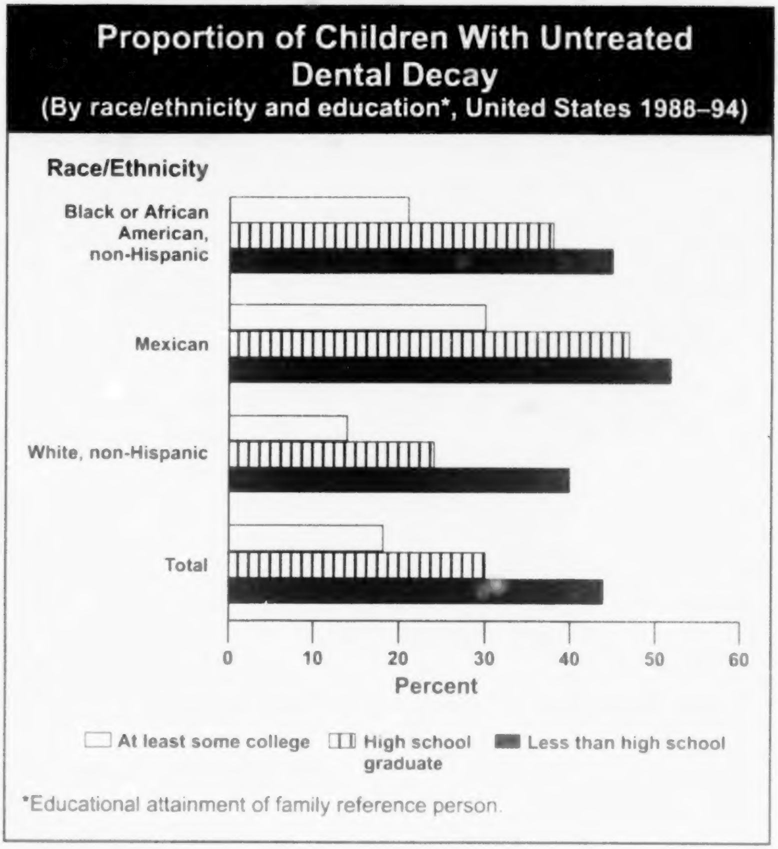
Oral health is an essential and integral component of health throughout life. No one can be truly healthy unless he or she is free from the burden of oral and craniofacial diseases and conditions.[1] Millions of people in the United States experience dental caries, periodontal diseases, and cleft lip and cleft palate, resulting in needless pain and suffering; difficulty in speaking, chewing, and swallowing; increased costs of care; loss of self-esteem; decreased economic productivity through lost work and school days; and, in extreme cases, death.[2] Further, oral and pharyngeal cancers, which primarily affect adults over age 55 years, result in significant illnesses and disfigurement associated with treatment, substantial cost, and more than 8,000 deaths annually.[3]

Poor oral health and untreated oral diseases and conditions can have a significant impact on quality of life. Millions of people in the United States are at high risk for oral health problems because of underlying medical or handicapping conditions, ranging from very rare genetic diseases to more common chronic diseases such as arthritis and diabetes.[1] Oral and facial pain affects a substantial proportion of the general population.[2, 4]

Issues

Dental caries is the single most common chronic disease of childhood, occurring five to eight times as frequently as asthma, the second most common chronic disease in children.[5] Despite the reduction in cases of caries in recent years, more than half of all children have caries by the second grade, and, by the time students finish high school, about 80 percent have caries.[6] Unless arrested early, caries is irreversible.

Early childhood caries (ECC) affects the primary teeth of infants and young children aged 1 to 6 years.[7] The exact cause of ECC is unknown, but factors such as large family size, nutritional status of the mother and the infant, and the transfer of infectious organisms from caregiver to infant are under study.[8, 9] Infant feeding practices in which children are put to bed with formula or other sweetened drinks or sweetened pacifiers, especially if a child falls asleep while feeding, have been associated with ECC.[10] Some professional associations recommend that a child should first visit a dentist at age 1 year.



Proportion of Children With Untreated Dental Decay
(By race/ethnicity and education*, United States 1988–94)

*Educational attainment of family reference person.

Source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS, 1988–94.

Cases of dental caries have declined dramatically among school-aged children. This decline is the result of various preventive regimens such as community water fluoridation and increased use of toothpastes and rinses that contain fluoride. Dental caries, however, remains a significant problem in some populations, particularly certain racial and ethnic groups and poor children.[11] National data indicate that 80 percent of dental caries found in children is concentrated in 25 percent of the child population.[12] Increased use of dental sealants, toothbrushing with fluoridated toothpaste, community water fluoridation, and sound dietary practices are needed to reduce tooth decay.

Data from the third National Health and Nutrition Examination Survey (NHANES III) indicated that 30 percent of all adults had untreated dental decay; 85 percent had ever experienced dental caries. More than 37 percent of persons aged 65 years or older in the United States with teeth had at least one decayed or filled root surface.[13] If current trends continue, the baby boomer generation will lose fewer teeth as they age but will have more teeth that are at risk for dental caries throughout life.

Oral and pharyngeal cancer comprises a diversity of malignant tumors that affect the oral cavity and pharynx; virtually all of these tumors are squamous cell carcinomas. Some 31,000 new cases of oral and pharyngeal cancer were expected to be diagnosed in 1999, and approximately 8,100 persons were expected to die from the disease.[3] Oral and pharyngeal cancer occurs more frequently than leukemia, Hodgkin's disease, and cancers of the brain, cervix, ovary, liver, pancreas, bone, thyroid gland, testes, and stomach. Oral and pharyngeal cancer is the 7th most common cancer found among white males (4th most common among black men) and the 14th most common among U.S. women. The 5-year survival rate for oral and pharyngeal cancer is only 52 percent,[14] and most of these cancers are diagnosed at late stages. Only 7 percent of U.S. adults aged 40 years and older reported having had an oral cancer examination in the past year, which is the recommended interval.[15]

Cleft lip and cleft palate are among the more common birth defects in the United States. These congenital defects occur in about 1 per 1,000 live births.[16, 17] States should have an effective, efficient mechanism in place for identifying, recording, and referring for treatment infants with these conditions. Primary prevention of these craniofacial anomalies involves minimizing exposure to known causes of malformations and, where indicated, providing genetic counseling.

Oral diseases and conditions may have a significant impact on general health; some poor general health conditions also may affect oral health status. Chemotherapy for cancer may cause inflammation and infection of oral mucous tissues. Head and neck radiotherapy and medications taken for many chronic conditions can affect the salivary glands, resulting in decreases in or loss of salivary flow, which, in turn, contribute to the ability to chew and speak and to dental decay.[1] Studies point to associations between periodontal diseases and low birth weight and premature births,[18, 19, 20] as well as between periodontitis and heart disease and stroke.[21, 22, 23] The initiation and progression of periodontal infections are affected by systemic factors and habits,[24] including tobacco use, uncontrolled diabetes, stress, and genetic factors.

For patients with special risks, invasive dental procedures may result in infective endocarditis;[25] infections of artificial knee, hip, and shoulder joints; and complications associated with organ and bone marrow transplantation. Oral complications associated with HIV infection also can have a significant impact on overall health, resulting in loss of appetite, painful mouth sores, weight loss, hospitalization, and potentially life-threatening fungal infections.[1]

Many persons in the United States do not receive essential dental services. Through increased access to appropriate and timely care, Americans can enjoy improved oral health. Barriers to care include cost; lack of dental insurance, public programs, or providers from underserved racial and ethnic groups; and fear of dental visits. Additionally, some people with limited oral health literacy may not be able to find or understand information and services.

To promote oral health and prevent oral diseases, oral health literacy among all groups is necessary. In addition, oral health services—preventive and restorative—should be available, accessible, and acceptable to all persons in the United States. In areas where different languages, culture, and health care beliefs would otherwise be barriers to care, a cadre of clinically and culturally competent providers must be available to provide care.

Of the 16,926 undergraduate dental students enrolled in U.S. dental schools in 1996-97, fewer than 1,000 were African American, and fewer than 1,000 were Hispanic.[26] Native Americans continue to constitute less than 1 percent of the total undergraduate dental enrollment.[26] Strategic measures are needed to increase the number of people from certain racial and ethnic groups who will seek careers in dentistry and public health, now and in the future. With the current health disparities and projected demographic changes in the U.S. population, such measures are needed for all aspects of oral health: education, research, health promotion, and clinical services within the private and public sectors.

One subject of oral health interest, daily brushing with a fluoride-containing toothpaste, is not addressed because data for tracking progress will not be available during the first half of the decade (2000-5).

Trends

Cases of dental caries in the permanent teeth of school-aged children have been declining in the United States for approximately 20 years. The proportion of untreated dental caries in school-aged children also has been declining overall, but has increased among children aged 6 to 8 years.[27, 28] Fewer adults are having teeth extracted because of dental decay or periodontal disease, and the percentage of persons who have lost all of their natural teeth has been declining steadily.

The percentage of school-aged children with dental sealants has risen in recent years as the public and private sector increasingly use the procedure, dental insurance pays for dental sealants, and parents request sealants for their children.[28] No increase, however, has occurred among children in low-income populations.

Community water fluoridation grew rapidly from its inception in 1945 until about 1980; since then, the proportion of the U.S. population living in communities with fluoridated water supplies has remained at 60 to 62 percent.[29] About 100 million persons still lack the benefits of community water fluoridation.

Over the past 20 years, oral and pharyngeal cancer deaths have declined by about 25 percent, and new cases have declined by 10 percent, but the 5-year survival rate has remained unchanged. African American men, however, have experienced increases in both death rates and new case rates.[30]

Spending for dental services in the United States has risen steadily but has remained fairly constant as a proportion of personal health care spending—about

4.5 percent.[31] Dental insurance coverage has not increased. Only 44 percent of persons in the United States have some form of private dental insurance (most with limited coverage and with high copayments), 9 percent have public dental insurance (Medicaid and Children's Health Insurance Program), 2 percent have other dental insurance, and 45 percent have no dental insurance.[32]

Disparities

As with general health, oral health status tends to vary in the United States on the basis of sociodemographic factors. For example, the level of untreated dental caries among African American children aged 6 to 8 years (36 percent) and Hispanic children (43 percent) is greater than for white children (26 percent); as few as 3 percent of poor children have dental sealants compared to the national average (23 percent). Further, the 5-year survival rate is lower for oral and pharyngeal cancer among African Americans than whites (31 percent versus 55 percent);[30] adults with less than a high school education (4 percent) and those with a high school education (6 percent) were less likely than those with some college (12 percent) to have had an oral cancer examination in the past year; adults with some college (15 percent) have 2 to 2.5 times less destructive periodontal disease than those with high school (28 percent) and less than high school (35 percent) levels of education.[28] Among persons aged 65 years and older, 39 percent of persons with less than a high school education were edentulous (had lost all their natural teeth) in 1997, compared with 13 percent of persons with at least some college.[33]

Promotion of oral health requires self-care and professional care as well as population-based initiatives. The proportion of the U.S. population that annually makes at least one dental visit and the average number of visits made vary significantly by age, race, dental status, level of education, and family income.[9] About 65 percent of the total U.S. population over age 2 years visited a dentist in the past year, but only about half of those aged 65 years and older made a dental visit. Among adults with teeth, 67 percent had a dental visit in the past year compared with 37 percent for persons without teeth.[33]

Opportunities

An increased focus on oral health by Federal, State, and professional organizations that occurred at the end of the 1990s should help achieve improvements in oral health and quality of life for individuals and communities. If initiatives, partnerships, and collaborations flourish in this environment of heightened interest, then oral health literacy will increase, access to preventive and restorative services for persons in need will improve, surveillance of oral diseases or conditions will be enhanced, and appropriate research will explore new ways to improve oral health for everyone in the United States.

Recent legislation in three States requires the widespread implementation of water fluoridation, which should lead to more communities with optimally fluoridated water. By the end of the 20th century, dental caries was limited in many children to pit and fissure tooth surfaces, for which dental sealants are ideal. Opportunities to encourage the dental profession to adopt and implement this preventive technology and for dental insurance companies to pay for sealants must be promoted. Every opportunity must be taken to educate the public about the value of sealants for children shortly after their permanent molars erupt. Opportunities must be expanded to target certain preventive procedures to poor, largely inner-city and rural children in school-based or school-linked programs.

Reducing deaths from oral and pharyngeal cancer and improving the early detection of both types of cancer require immediate attention. Efforts must be made to continue the momentum begun in the 1990s that focused on reducing the number of new cases of oral and pharyngeal cancer and improving survival.[14, 15] Specifically, dental personnel need to provide comprehensive oral cancer exams on a routine basis for persons aged 40 years and older or who are otherwise at high risk. Dental personnel also need to provide counseling to patients to stop tobacco use and limit alcohol use, both of which are associated with oral and pharyngeal cancer.

The 21st century may provide the opportunity to reduce the burden of birth defects, such as cleft lip and cleft palate. As local and State surveillance systems of developmental anomalies are created or expanded, opportunities should be explored to integrate cleft lip and cleft palate into those systems. If studies confirm the beneficial effects of folic acid in preventing cleft lip and cleft palate, then programs incorporating the use of folic acid should be implemented and monitored.

In general, access to primary preventive and early intervention services must be improved, and barriers to the dental care system should be removed. Many persons of all ages are receiving professional services in the oral health care system, but more emphasis must be placed on vulnerable populations who need professional care.

Interim Progress Toward Year 2000 Objectives

More than half the 17 Healthy People 2000 oral health objectives show progress, and 1 was met. One objective has moved away from the target, and two have shown mixed results. Data since baseline are not available for four of the objectives. The objective of reducing deaths from oral and pharyngeal cancer was met. Dental decay has declined in persons aged 15 years nearly to its target, although less progress has occurred in children aged 6 to 8 years. Similar trends are apparent in those two age groups for untreated dental decay. Elderly persons show improvement in edentulousness, but the number of persons aged 35 to 44 years who had never lost a tooth from caries or periodontal disease fails to show improvement. An increased proportion of children are receiving dental sealants, but further improvement is needed. Little change has occurred in the proportion of the U.S. population served by fluoridated water systems.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Oral Health

Goal: Prevent and control oral and craniofacial diseases, conditions, and injuries and improve access to related services.

Number	Objective
21-1	Dental caries experience
21-2	Untreated dental decay
21-3	No permanent tooth loss
21-4	Complete tooth loss
21-5	Periodontal diseases
21-6	Early detection of oral and pharyngeal cancer
21-7	Annual examinations for oral and pharyngeal cancer
21-8	Dental sealants
21-9	Community water fluoridation
21-10	Use of oral health care system
21-11	Use of oral health care system by residents in long-term care facilities
21-12	Dental services for low-income children
21-13	School-based health centers with oral health component
21-14	Health centers with oral health service components
21-15	Referral for cleft lip or palate
21-16	State-based surveillance system
21-17	Tribal, State, and local dental programs

21-1. Reduce the proportion of children and adolescents who have dental caries experience in their primary or permanent teeth.

21-1a. Reduce the proportion of young children with dental caries experience in their primary teeth.

Target: 11 percent.

Baseline: 18 percent of children aged 2 to 4 years had dental caries experience in 1988-94.

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS; California Oral Health Needs Assessment of Children, Dental Heath Foundation, 1993-94.

Throughout childhood and adolescence, many opportunities exist for the primary prevention of dental decay. The earliest opportunity to prevent dental decay occurs during prenatal counseling of caregivers about diet, oral hygiene practices, appropriate uses of fluorides, and the transmission of bacteria from parents to children. ECC, sometimes referred to as baby bottle tooth decay or nursing caries, can be a devastating condition, often requiring thousands of dollars and a hospital visit with general anesthesia for treatment.[8, 9] The pain, psychological trauma, health risks, and costs associated with restoration of these carious teeth for children affected by ECC can be substantial.[10] Dental care for pregnant females, counseling, reinforcement of health promoting behaviors with care givers of children, and intervention by dental and other professionals to improve parenting practices (use of fluorides, use of professional services, and diet) provide the best available means of preventing this serious oral disease.

The average number of decayed and filled teeth among 2- to 4-year-olds has remained unchanged over the past 25 years. Children whose parents or care givers have less than a high school education or whose parents and care givers are Hispanic, American Indians, or Alaska Natives appear to be at markedly increased risk for developing ECC.[1]

21-1b. Reduce the proportion of children with dental caries experience either in their primary or permanent teeth.

Target: 42 percent.

Baseline: 52 percent of children aged 6 to 8 years had dental caries experience in 1988-94.

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS; California Oral Health Needs Assessment of Children, 1993-94, Dental Health Foundation.

Children aged 6 to 8 years are at an important stage of dental development. They still have the majority of their primary teeth, and their permanent first molars and incisors are erupting into their mouths. Maintaining optimal oral health for these children is important for their current functional oral health and for their long-term health. Between the time the first permanent molars erupt into the mouth and before vulnerable pits and fissures are infected, children should be assessed for their need for dental sealants.

21-1c. Reduce the proportion of adolescents with dental caries experience in their permanent teeth.

Target: 51 percent.

Baseline: 61 percent of adolescents aged 15 years had dental caries experience in 1988-94.

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS.

Caries experience is cumulative, thus higher among adolescents than among young children. Effective personal preventive measures—for example, tooth brushing with fluoride toothpastes—need to be applied throughout adolescence, as children become more independent in their oral hygiene and dietary habits. Regular dental visits provide an opportunity to assess oral hygiene and dietary practices and to place sealants on vulnerable permanent teeth that erupt during this life stage (including second permanent molars at around age 12 years).

Children and Adolescents, Selected Ages, 1988–94 (unless noted)	**Dental Caries Experience**		
	21-1a. Aged 2 to 4 Years	**21-1b. Aged 6 to 8 Years**	**21-1c. Aged 15 Years**
	Percent		
TOTAL	18	52	61
Race and ethnicity			
American Indian or Alaska Native (1999)*	75	90	89
Asian or Pacific Islander (1993-94)†	34	90	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	24	50	70

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Children and Adolescents, Selected Ages, 1988–94 (unless noted)	Dental Caries Experience		
	21-1a. Aged 2 to 4 Years	21-1b. Aged 6 to 8 Years	21-1c. Aged 15 Years
	Percent		
White	15	51	60
Hispanic or Latino	DSU	DSU	DSU
Mexican American	27	68	57
Not Hispanic or Latino	17	49	62
Black or African American	24	49	69
White	13	49	61
Gender			
Female	19	54	63
Male	18	50	60
Education level (head of household)			
Less than high school	29	65	59
High school graduate	18	52	63
At least some college	12	43	61
Disability status			
Persons with disabilities	DNC	DNC	DNC
Persons without disabilities	DNC	DNC	DNC
Select populations			
3rd grade students	NA	60	NA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable. NA = Not applicable.

*Data are for IHS service areas.

†Data are for California.

21-2. Reduce the proportion of children, adolescents, and adults with untreated dental decay.

21-2a. Reduce the proportion of young children with untreated dental decay in their primary teeth.

Target: 9 percent.

Baseline: 16 percent of children aged 2 to 4 years had untreated dental decay in 1988-94.

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS; California Oral Health Needs Assessment of Children, 1993-94, Dental Health Foundation.

Primary teeth should be retained until they come out naturally and are replaced by the permanent teeth. Healthy retained primary teeth enhance self-image; decayed or missing primary teeth may cause a child to be self-conscious and reluctant to smile. Children need to eat nutritious foods to develop normally. The pain and infection of rampant dental disease compromise their ability to eat well. Moreover, early tooth loss caused by dental decay can result in impaired speech development, failure to thrive, absence from and inability to concentrate in school, and reduced self-esteem.

Children aged 2 to 4 years are least likely to have been seen by a dentist, whereas a much larger proportion have been taken to a health provider for medical care or counseling.[36] Thus these latter providers should be trained to examine and identify major oral diseases of toddlers and refer those with problems for necessary care.

21-2b. Reduce the proportion of children with untreated dental decay in primary and permanent teeth.

Target: 21 percent.

Baseline: 29 percent of children aged 6 to 8 years had untreated dental decay in 1988-94.

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS; California Oral Health Needs Assessment of Children, 1993-94, Dental Health Foundation.

To avoid pain and discomfort, decayed primary teeth need to be restored, particularly molars in children aged 6 to 8 years. Retention of primary molars until they fall out normally (aged 10 to 12 years) allows adequate dental arch space for the eruption of succeeding permanent premolars and avoids the tipping forward of first permanent molars, possibly creating serious orthodontic problems. Carious permanent teeth should be repaired promptly so that fillings may be kept small and as much natural tooth as possible conserved. Often, fillings have to be replaced several times during life; each time, additional tooth structure has to be removed, weakening the tooth. Preventing the initial cavity by appropriate use of fluorides and sealants is preferable to restoring the tooth after disease has occurred.

21-2c. Reduce the proportion of adolescents with untreated dental decay in their permanent teeth.

Target: 15 percent.

Baseline: 20 percent of adolescents aged 15 years had untreated dental decay in 1988-94.

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS.

By age 15 years, all permanent teeth other than third molars have erupted and vulnerable chewing surfaces of permanent second molars have been exposed to cariogenic factors for 2 or 3 years. Further, by this age, approximately 75 percent of adolescents have experienced dental decay.[6]

21-2d. Reduce the proportion of adults with untreated dental decay.

Target: 15 percent.

Baseline: 27 percent of adults aged 35 to 44 years had untreated dental decay in 1998–94.

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS.

Approximately 30 percent of adults have untreated dental decay. Untreated dental decay can lead to extensive dental treatment and can be quite costly. Left unheeded, one can experience pain, abscess, and extraction of the tooth.

Twice as many blacks or African Americans (46 percent) than whites (23 percent) have tooth decay. More than three times as many persons with less than a high school education (51 percent) have untreated dental decay than adults with some college education (16 percent). Dental decay is just as preventable in adults as it is in children. Access to community water fluoridation benefits adults as well as children. Access to other preventive interventions is critical, as well as access to dental treatment to restore the tooth.

Children, Adolescents, and Adults, Selected Ages, 1988-94 (unless noted)	Untreated Dental Decay			
	21-2a. Aged 2 to 4 Years	21-2b. Aged 6 to 8 Years	21-2c. Aged 15 Years	21-2d. Aged 35 to 44 Years
	Percent			
TOTAL	16	29	20	27
Race and ethnicity				
American Indian or Alaska Native (1999)*	68	69	66	DSU
Asian or Pacific Islander (1993-94)†	30	71	DSU	DSU
Asian	DNC	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC	DNC

Children, Adolescents, and Adults, Selected Ages, 1988-94 (unless noted)	Untreated Dental Decay			
	21-2a. Aged 2 to 4 Years	21-2b. Aged 6 to 8 Years	21-2c. Aged 15 Years	21-2d. Aged 35 to 44 Years
	Percent			
Black or African American	22	36	29	46
White	11	26	19	24
Hispanic or Latino	DSU	DSU	DSU	DSU
Mexican American	24	43	27	34
Not Hispanic or Latino	14	26	19	DNA
Black or African American	22	35	28	47
White	11	22	18	23
Gender				
Female	16	32	22	25
Male	16	25	17	29
Education level (head of household)				
Less than high school	26	44	29	51
High school graduate	16	30	18	34
At least some college	9	25	15	16
Disability status				
Persons with disabilities	DNC	DNC	DNC	DNA
Persons without disabilities	DNC	DNC	DNC	DNA
Select populations				
3rd grade students	NA	33	NA	NA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable. NA = Not applicable.

*Data are for IHS service areas.

†Data are for California.

21-3. Increase the proportion of adults who have never had a permanent tooth extracted because of dental caries or periodontal disease.

Target: 42 percent.

Baseline: 31 percent of adults aged 35 to 44 years had never had a permanent tooth extracted because of dental caries or periodontal disease in 1988-94.

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health of Native Americans, 1999, IHS.

Persons Aged 35 to 44 Years, 1988-94	**No Tooth Extractions** Percent
TOTAL	31
Race and ethnicity	
American Indian or Alaska Native (1999)*	23
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	12
White	34
Hispanic or Latino	DSU
Mexican American	36
Not Hispanic or Latino	DNA
Black or African American	12
White	36
Gender	
Female	32
Male	30
Education level	
Less than high school	15
High school graduate	21
At least some college	41
Disability status	
Persons with disabilities	DNA
Persons without disabilities	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data are for IHS service areas.

A full dentition is defined as having 28 natural teeth, exclusive of third molars and teeth removed for orthodontic treatment or as a result of trauma. Most persons can keep their teeth for life with optimal personal, professional, and population-based preventive practices. Early tooth loss has been shown to be a predictor of eventual edentulism.[17] As teeth are lost, a person's ability to chew and speak decreases. A loss of or a withdrawal from social functioning can occur. Tooth loss can result from infection, unintentional injury, and from head and neck cancer treatment. In addition, certain orthodontic and prosthetic services sometimes require the removal of teeth.

Despite an overall trend toward a reduction in tooth loss in the U.S. population,[38] older data indicate 25 percent of American Indians and Alaska Natives aged 35 to 44 years have fewer than 20 natural teeth;[1] among all persons aged 55 years and older, nearly 75 percent have fewer than 20 natural teeth. Females tend to have more teeth extracted than males of the same age group. African Americans are more likely than whites to have teeth extracted.[6] The percentage of whites who have never had a permanent tooth extracted is more than three times as great as for African Americans. Among all predisposing and enabling variables, low educational level often has been found to have the strongest and most consistent association with tooth loss.[39]

21-4. Reduce the proportion of older adults who have had all their natural teeth extracted.

Target: 20 percent.

Baseline: 26 percent of adults aged 65 to 74 years had all their natural teeth extracted in 1997.

Target setting method: Better than the best.

Data sources: National Health Interview Survey (NHIS), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS.

Adults Aged 65 to 74 Years, 1997 (unless noted)	**All Teeth Extracted**
	Percent
TOTAL	26
Race and ethnicity	
American Indian or Alaska Native (1999)*	30
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	30
White	25
Hispanic or Latino	24
Not Hispanic or Latino	26
Black or African American	30
White	26

Adults Aged 65 to 74 Years, 1997 (unless noted)	All Teeth Extracted Percent
Gender	
Female	27
Male	24
Education level	
Less than high school	39
High school graduate	26
At least some college	13
Disability status	
Persons with disabilities	34
Persons without disabilities	22

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data are for IHS service areas.

Despite a steady decline in the rate of complete tooth loss over the past several decades, 26 percent of persons aged 65 to 74 years had lost all of their natural teeth. The rate of complete tooth loss among African Americans is 30 percent whereas that for Hispanics is 24 percent. Among all persons aged 65 years and older, 30 percent had lost all of their natural teeth.[33] Low-income adults aged 65 years and older experience a higher rate of edentulism (48 percent in 1993).[28] Also, State-specific variations range from 13 to 47 percent in the self-reported prevalence of complete tooth loss.[40]

Among elderly persons, loss of all natural teeth can contribute to psychological, social, and physical impairment.[2] Even when missing teeth are replaced with well-constructed dentures, there may be limitations in speech, chewing ability, taste perception, and quality of life. Most tooth loss is the result of dental caries and periodontal disease. The level of edentulism reflects not only the cases of caries and periodontal disease, but also the availability and use of appropriate professional services and community preventive services. Tooth loss can be prevented through education, early diagnosis, and regular dental care. Children and adults (and the health care professionals who serve them) must recognize the signs and symptoms of oral and systemic diseases and know the oral and general health care practices necessary to prevent them.

21-5. Reduce periodontal disease.

Target and baseline:

Objective	Reduction in Periodontal Disease in Adults Aged 35 to 44 Years	1988–94 Baseline	2010 Target
		Percent	
21-5a.	Gingivitis	48	41
21-5b.	Destructive periodontal disease	22	14

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS.

Adults Aged 35 to 44 Years, 1988–94 (unless noted)	21-5a. Gingivitis	21-5b. Destructive Periodontal Disease
	Percent	
TOTAL	48	22
Race and ethnicity		
American Indian or Alaska Native (1999)*	96	56
Asian or Pacific Islander	DSU	DSU
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	51	33
White	47	20
Hispanic or Latino	DSU	DSU
Mexican American	64	24
Not Hispanic or Latino	DNA	DNA
Black or African American	51	33
White	45	20
Gender		
Female	45	15
Male	52	29

Adults Aged 35 to 44 Years, 1988–94 (unless noted)	21-5a. Gingivitis	21-5b. Destructive Periodontal Disease
	Percent	
Education level		
Less than high school	60	35
High school graduate	52	28
At least some college	42	15
Disability status		
Persons with disabilities	DNA	DNA
Persons without disabilities	DNA	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data are for IHS service areas.

Gingivitis is characterized by localized inflammation, swelling, and bleeding gum tissues without a loss of connective tissue or bone support. Gingivitis usually is reversible with proper daily oral hygiene and serves as a crude measure of a person's self-care practices.[41] Removal of dental plaque from the teeth on a daily basis is extremely important to prevent gingivitis, which can progress to destructive periodontal disease. Most plaque removal can be achieved by conscientious tooth brushing. The use of dental floss helps to remove dental plaque from tooth surfaces that touch one another.

Most young adults have some gingivitis. Cases of gingivitis are high among Hispanics, American Indians, Alaska Natives, and adults with low incomes.[1] Cases of gingivitis likely will remain a substantial problem and may increase as tooth loss from dental caries declines or as a result of the use of some systemic medications. Although not all cases of gingivitis progress to periodontal disease, all periodontal disease starts as gingivitis.[42] The major method available to prevent destructive periodontitis, therefore, is to prevent the precursor condition of gingivitis.

Periodontal disease is manifested by the loss of the connective tissue and bone that support the teeth. It places a person at risk of eventual tooth loss unless appropriate treatment occurs. The presence of one or more sites with 4 mm or greater loss of tooth attachment to surrounding periodontal tissues has been used to measure the cases of destructive periodontal disease. This measure has allowed the monitoring of changes in periodontal disease over time and distinguishes the status of select populations from one another. Other measurements under development may serve as indicators of periodontal disease in the future. Among adults, destructive periodontal disease may be associated with an increased risk of some systemic disease and is a leading cause of bleeding, pain, infection, tooth mobility, and tooth loss.

Tobacco use, especially cigarette smoking, is a significant risk factor for periodontal disease.[24] Home-care oral hygiene practices, such as daily tooth brushing and flossing, reduce bacterial plaque on teeth and gingiva and help maintain periodontal health. The number of cases of periodontal disease in persons with poor oral hygiene is more than 20 times that for persons who have good oral care practices.[24] Recent research has suggested that bacteria associated with periodontal disease are associated with an increased risk of heart disease and stroke, premature births in some females, and respiratory infection in susceptible individuals.[18, 19, 20, 21, 22, 23]

The cases and severity of destructive periodontal disease are measured by loss of tissue attachment to the tooth and gingival pocket depth. These measures increase with age and vary by socioeconomic status. The number of cases of periodontal disease is higher than the national average among American Indians and Alaska Natives, adults with less than a high school education, and migrant workers.[1] Unless preventive measures are taken, the problem of destructive periodontal disease will grow as the aging U.S. population retains more teeth later in life. More effective intervention across the entire adult age spectrum will be essential.

21-6. Increase the proportion of oral and pharyngeal cancers detected at the earliest stage.

Target: 50 percent.

Baseline: 35 percent of oral and pharyngeal cancers (stage I, localized) were detected in 1990-95.

Target setting method: Better than the best.

Data sources: State cancer registries; Surveillance, Epidemiology, and End Results (SEER), NIH, NCI.

Persons With Oral and Pharyngeal Cancers, 1990-95	**Detected at Earliest Stage** Percent
TOTAL	35
Race and ethnicity	
American Indian or Alaska Native	20
Asian or Pacific Islander	DNA
Asian	DNA
Native Hawaiian and other Pacific Islander	DNA
Black or African American	21
White	38

Persons With Oral and Pharyngeal Cancers, 1990-95	Detected at Earliest Stage Percent
Hispanic or Latino	36
Not Hispanic or Latino	34
Black or African American	DNA
White	DNA
Gender	
Female	39
Male	34
Education level	
Less than high school	DNA
High school graduate	DNA
At least some college	DNA
Disability status	
Persons with disabilities	DNA
Persons without disabilities	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

For many years, the proportion of oral and pharyngeal cancer lesions diagnosed at stage I has remained low at about 35 percent.[10] Increasing the proportion of lesions detected at the earliest stage of diagnosis improves the 5-year survival rate and is one strategy to reduce illness and deaths.

For example, the 5-year survival rate for early stage cancer is 81 percent but is only 22 percent among persons diagnosed with advanced stage cancer. Further, only 19 percent of African Americans with oral and pharyngeal cancer are diagnosed at the local stage (with 33 percent 5-year survival), compared to 38 percent of whites (with 55 percent 5-year survival).

A higher proportion of oral and pharyngeal cancer lesions diagnosed at stage I and a lower number of deaths from oral and pharyngeal cancers would indicate that strategies to increase appropriate detection with comprehensive oral and pharyngeal cancer examinations and referral have been successful. Other outcome measures indicating success include a reduction in new cases of oral and pharyngeal cancer, reduced death rates, and an increase in 5-year survival rates.

21-7. Increase the proportion of adults who, in the past 12 months, report having had an examination to detect oral and pharyngeal cancer.

Target: 35 percent.

Baseline: 14 percent of adults aged 40 years and older reported having had an oral and pharyngeal cancer examination in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best will be used when data are available.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 40 Years and Older, 1992*	Oral/Pharyngeal Cancer Examination in Past 12 Months Percent
TOTAL	9
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	5
White	10
Hispanic or Latino	5
Not Hispanic or Latino	9
Black or African American	5
White	10
Gender	
Female	9
Male	10

Adults Aged 40 Years and Older, 1992*	**Oral/Pharyngeal Cancer Examination in Past 12 Months** Percent
Education level	
Less than high school	5
High school graduate	8
At least some college	14

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: 1992 data age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Oral cancer detection is accomplished by a thorough extra-oral examination of the head and neck and an intra-oral examination including the tongue and the entire oral and pharyngeal mucosal tissues, lips, and intra- and extra-oral palpation of the lymph nodes. Although the sensitivity and specificity of the oral cancer examination have not been established in clinical studies, evidence clearly supports a better prognosis with early detection and treatment of oral cancer.[44] If suspicious tissues are detected during examination, definitive diagnostic tests are needed, such as biopsies, to make a firm diagnosis.

The occurrence of oral and pharyngeal cancer varies by race and ethnicity. For example, blacks and whites have 12.5 and 10.0 new cases per 100,000 per year, respectively; while Hispanics and American Indians and Alaska Natives have only 6.5 and 8.8 new cases per year, respectively.[3]

Regular oral cancer examinations afford an opportunity for practitioners to discuss with patients primary prevention of these lesions—that is, avoiding known risk factors, such as the use of tobacco products and alcohol. The risk of oral cancer is increased 6 to 28 times in current smokers. Alcohol consumption is an independent risk factor and, when combined with the use of tobacco products, accounts for 90 percent of all oral cancers.[43] Individuals also should be advised to avoid other potential carcinogens, such as exposure to sunlight (risk factor for lip cancer) without protection (use of lip sunscreen and hats recommended). (See Focus Area 3. Cancer.)

Because more adults seek care from physicians than from dentists, medical personnel must be educated on the importance of routinely doing oral cancer detection examinations of patients at high risk, and they also must be trained in the proper procedures for these examinations.[44]

21-8. Increase the proportion of children who have received dental sealants on their molar teeth.

Target and baseline:

Objective	Increase in Children Receiving Dental Sealants on Their Molar Teeth	1988–94 Baseline	2010 Target
21-8a.	Children aged 8 years	23	50
21-8b.	Adolescents aged 14 years	15	50

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; Oral Health Survey of Native Americans, 1999, IHS.

Children, Selected Ages, 1988–94 (unless noted)	Dental Sealants on Molars 21-8a. Aged 8 Years	 21-8b. Aged 14 Years
	Percent	
TOTAL	23	15
Race and ethnicity		
American Indian or Alaska Native (1999)*	37	26
Asian or Pacific Islander	DSU	DSU
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	11	5
White	26	19
Hispanic or Latino	DSU	DSU
Mexican American	10	7
Not Hispanic or Latino	25	DNA
Black or African American	11	5
White	29	18
Gender		
Female	24	14
Male	22	16

Children, Selected Ages, 1988–94 (unless noted)	Dental Sealants on Molars	
	21-8a. **Aged 8 Years**	**21-8b.** **Aged 14 Years**
	Percent	
Education level (head of household)		
Less than high school	17	4
High school graduate	12	6
At least some college	35	28
Disability status		
Persons with disabilities	DNC	DNC
Persons without disabilities	DNC	DNC
Select populations		
3rd grade students	26	NA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable. NA = Not applicable.

*Data are for IHS service areas.

Since the early 1970s, childhood dental caries in smooth tooth surfaces (those without pits and fissures) has declined markedly because of widespread exposure to fluorides. By 1986-87, approximately 90 percent of the decay in children's teeth occurred in tooth surfaces with pits and fissures, and almost two-thirds were found in the chewing surfaces alone.[27]

Pit-and-fissure sealants—plastic coatings applied to susceptible tooth surfaces—have been approved for use for many years and have been recommended by professional health associations and public health agencies. First permanent molars erupt into the mouth at about age 6 years. Placing sealants on these teeth shortly after their eruption protects them from the development of caries in areas of the teeth where food and bacteria are retained. If sealants were applied routinely to susceptible tooth surfaces in conjunction with the appropriate use of fluoride, most tooth decay in children could be prevented.

Second permanent molars erupt into the mouth at about age 12 to 13 years. Pit-and-fissure surfaces of these teeth are as susceptible to dental caries as the first permanent molars of younger children. Therefore, young teens need to receive dental sealants shortly after the eruption of their second permanent molars.

21-9. Increase the proportion of the U.S. population served by community water systems with optimally fluoridated water.

Target: 75 percent.

Baseline: 62 percent of the U.S. population was served by community water systems with optimally fluoridated water in 1992.

Target setting method: 21 percent improvement.

Data source: Water Fluoridation Reporting System Census, CDC, NCCDPHP.

Community water fluoridation is the procedure of adjusting the natural fluoride concentration of a community's water supply to a level that is best for the prevention of dental decay. In the United States, community water fluoridation has been the basis for the primary prevention of dental decay for nearly 55 years and has been recognized as 1 of 10 great achievements in public health of the 20th century.[19] It is an ideal public health method because it is effective, eminently safe, inexpensive, requires no cooperative effort or direct action, and does not depend on access or availability of professional services. It is equitable because the entire population benefits regardless of financial resources.[20]

Water fluoridation reduces or eliminates disparities in preventing dental caries among different socioeconomic, racial, and ethnic groups. Fluoridation helps to lower the cost of dental care and dental insurance and helps residents retain their teeth throughout life. Of the Nation's 50 largest cities, only 7 do not benefit from community water fluoridation.[20] The consumption of fluoridated water provides both systemic fluoride exposure to developing teeth and frequent topical exposure to erupted teeth, promoting remineralization of early caries among persons of all ages.

Operators of municipal water plants need to maintain targeted concentrations of fluoride in water in fluoridated communities. Ongoing education for water plant personnel must continue with appropriate surveillance by State and local health officials.

21-10. Increase the proportion of children and adults who use the oral health care system each year.

Target: 83 percent.

Baseline: 65 percent of persons aged 2 years and older in 1997 visited a dentist during the previous year (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data sources: National Health Interview Survey (NHIS), CDC, NCHS; 1999 Annual Patient Registration Management System (PRMS), IHS.

Persons Aged 2 Years and Older, 1997 (unless noted)	**Annual Dental Visit**
	Percent
TOTAL	65
Race and ethnicity	
American Indian or Alaska Native (1999)*	25
Asian or Pacific Islander	62
Asian	62
Native Hawaiian and other Pacific Islander	61
Black or African American	57
White	66
Hispanic or Latino	53
Not Hispanic or Latino	66
Black or African American	56
White	68
Gender	
Female	67
Male	63
Education level (aged 25 years and older)	
Less than high school	41
High school graduate	59
At least some college	74
Disability status	
Persons with disabilities	58
Persons without disabilities	67
Select populations	
Children aged 2 to 17 years	73
Children at first school experience (aged 5 years)	75
3rd grade students	82
Children aged 2 to 21 years; <200 percent of poverty level	61
Adults aged 18 years and older	63
Adults aged 65 years and older	54
Dentate adults aged 18 years and older	67

Persons Aged 2 Years and Older, 1997 (unless noted)	Annual Dental Visit
	Percent
Edentate adults aged 18 years and older	34
Adults aged 18 years and older with disabilities	52

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population, except children aged 2 to 17 years, children aged 2 to 21 years, children at first school experience, and 3rd grade students.

*Data are for IHS service areas.

Although appropriate home oral health care and population-based prevention are essential, professional care also is necessary to maintain optimal oral and craniofacial health. Oral health care is an important, but often neglected, component of total health care. Regular dental visits provide an opportunity for the early diagnosis, prevention, and treatment of oral and craniofacial diseases and conditions for persons of all ages, as well as for the assessment of self-care practices. Experts recommend that children as young as age 1 year be examined for evidence of developing ECC. Further, parents should be advised to avoid feeding practices that may lead to ECC, and parents should be counseled about the appropriate use of fluoride and other preventive measures. Necessary tooth restorative care must be provided to avoid pain, abscesses, and the need for tooth extractions. Sealants should be placed shortly after the permanent molars erupt.

Adults who do not receive regular professional care can develop oral diseases that eventually require complex restorative treatment and may lead to tooth loss, systemic health problems, and even death in rare cases. As gums recede in adults, the root surfaces of teeth become susceptible to dental caries. As the U.S. population ages, root caries may become a significant dental problem for adults and, particularly, for seniors; one in every five persons will be aged 65 years or older by the year 2010. Adults susceptible to root caries should visit their dentists regularly for evaluation and treatment, if necessary.

Persons who have lost all their natural teeth are less likely to seek periodic dental care than those with teeth,[9] which, in turn, decreases the likelihood of early detection of oral cancer in those without teeth. Edentulism occurs most frequently among older adults who also have the greatest risk of developing oral cancer.

Persons with no natural teeth who lack regular dental care may develop soft tissue lesions from medications, systemic conditions, and exposure to tobacco, as well as from prosthetic appliances that are not fully functional or are not maintained properly. As they grow older, persons with and without teeth are at increased risk of oral and pharyngeal cancer, as well as autoimmune disorders and other chronic disabling conditions that have oral manifestations. People without teeth may be unaware that they are still at risk for oral diseases. Consequently, they may have long intervals between professional examinations. Coordination of care between physicians and dentists is essential for optimal general health and oral health.

21-11. Increase the proportion of long-term care residents who use the oral health care system each year.

Target: 25 percent.

Baseline: 19 percent of all nursing home residents received dental services in 1997.

Target setting method: 32 percent improvement. (Better than the best will be used when data are available.)

Data source: National Nursing Home Survey, CDC, NCHS.

To improve the oral health of the Nation's elderly persons and persons with disabilities who reside in long-term care facilities, every resident needs to have access to oral health assessment and treatment. Federal regulations require nursing facilities certified under Medicare or Medicaid or both to ensure that each resident attains and maintains the highest practicable physical, psychosocial, and mental well-being.

For many nursing home residents, substantial anecdotal evidence suggests that neither dental assessments nor subsequent treatments are being provided effectively. Nursing home staff members and State surveyors who assess long-term care facilities for certification should receive appropriate training to enable them to recognize residents' needs correctly and to ensure that necessary oral health services are available.

Residents of institutions face several barriers to obtaining needed dental services. Often, residents have multiple chronic diseases, take medications that affect their oral health, or have diseases or disabilities that make brushing and flossing their teeth difficult or impossible.[50] A decline in physical and oral health, use of one or more of the many medications that cause dry mouth (xerostomia), and inadequate access to dental care increase the risks of oral diseases such as yeast infections (candidiasis), caries on the crowns and roots of teeth, gingivitis, oral mucosal lesions, and periodontal disease.

21-12. Increase the proportion of children and adolescents under age 19 years at or below 200 percent of the Federal poverty level who received any preventive dental service during the past year.

Target: 57 percent.

Baseline: 20 percent of children and adolescents under age 19 years at or below 200 percent of the Federal poverty level received any preventive dental service in 1996.

Target setting method: Better than the best.

Data source: Medical Expenditures Panel Survey (MEPS), AHRQ.

Children Under Age 19 Years at or Below the Federal Poverty Level, 1996	Preventive Dental Visit in Past 12 Months Percent
TOTAL	20
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	13
White	25
Hispanic or Latino	16
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	21
Male	19

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Public policymakers have long recognized the need for programs to facilitate access to dental services for children from low-income households. Coverage for pediatric dental services has been required under Medicaid for more than two decades and is allowed, although not required, under the new State Children's Health Insurance Program, also known as CHIP.

Despite the potential for improved oral health status, only about 20 percent of Medicaid children were reported to have received any preventive dental services in 1993.[36] Current research also indicates that children from low-income households have higher caries rates and more unmet dental treatment needs than their higher income counterparts.[11]

21-13. (Developmental) Increase the proportion of school-based health centers with an oral health component.

Potential data source: School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP.

In some rural areas and urban neighborhoods, where health and social problems are concentrated and few residents have health insurance or the personal means to pay for private health care, most children do not receive timely preventive procedures.[30] The burden of untreated caries falls heaviest on children from low-income families.[11] Moreover, disparities in oral health status and the use of dental services persist among certain ethnic and racial groups.[9]

Increasingly, schools are being viewed as an effective way to improve access to health and social support services for vulnerable populations. Parents give permission for health center staff members to oversee the provision of health education and preventive and treatment services. School-affiliated strategies mobilize existing community resources to create referral networks for students and provide services in the school when appropriate, based on community needs, resources, standards, and requirements.[46] Few school-based health centers include an oral health component. School-based oral health services could enable the targeting of preventive services such as fluoride mouth rinses or tablets and dental sealants to underserved, low-income children. Services also could include screening, referral, and case management to ensure the timely receipt of treatment services from community practitioners. School-based health centers should have oral health services and educational materials that are culturally and linguistically appropriate.

Multiple models for school-based health centers are in place. They typically are funded from a mix of sources, both public and private. School-based health centers have been increasing in numbers nationwide. The number of school-based health centers nationally was estimated to be 1,157 in 1997-98; the proportion with a dental component, however, is thought to be low.[47]

21-14. Increase the proportion of local health departments and community-based health centers, including community, migrant, and homeless health centers, that have an oral health component.

Target: 75 percent.

Baseline: 34 percent of local jurisdictions and health centers had oral health components in 1997.

Target setting method: 19 percent improvement.

Data source: 1997 Uniformed Data Service Manual, HRSA, Bureau of Primary Health Care (BPHC).

Although dentists donate more services than do physicians to individuals who cannot afford care,[48] persons who cannot afford routine dental care and who are not covered either by public programs or by private dental insurance often do not receive basic dental services. Access to care for children and adults continues to be a problem for many, particularly for economically disadvantaged populations.

To eliminate disparities in the provision of health care, more opportunities for preventive and restorative dental services must be provided in areas where need is demonstrated. Some local health departments (estimated at less than 20 percent) promote community-based preventive services and provide dental services to children and to some adults; most local health departments lack a dental component. Other sources of health care are community, migrant, or homeless health centers, which are located in approximately 700 areas where a need has been documented. By the late 1990s, nearly 60 percent of community-based health centers had a dental component.[49] These centers, which strive to ensure that health education programs and oral health staff members are culturally competent and linguistically appropriate, extend dental care to groups that traditionally have limited access to dental services.

The need is great among many populations in the United States. These centers serve primarily select populations, who are more likely than whites to live or work in medically and dentally underserved areas. Rural and low-income urban select population communities are more likely to have a shortage of health care providers. More health care providers from racial and ethnic groups are needed because they are more likely than white health care providers to treat Medicaid or uninsured patients.[50, 51]

21-15. Increase the number of States and the District of Columbia that have a system for recording and referring infants and children with cleft lips, cleft palates, and other craniofacial anomalies to craniofacial anomaly rehabilitative teams.

Target: All States and the District of Columbia.

Baseline: 23 States and the District of Columbia had systems for recording and referring children with craniofacial anomalies in 1997.

Target setting method: Total coverage.

Data source: Survey of State Dental Directors, Illinois State Health Department.

States should have an effective mechanism in place for identifying, recording, and referring for treatment infants with cleft lips or cleft palates or both. Cleft lip and cleft palate are reported in about 1 of 1,000 live births, and isolated cleft palate is reported in about 0.5 of 1,000 live births, making them among the most common birth defects.[16, 17]

Physicians and nurses in hospital nurseries are usually the first to examine newborns and are responsible for noting any congenital anomalies and describing them on the neonatal medical records. Therefore, hospital personnel must understand the definitions of congenital defects and abnormalities of the lips and palate, properly examine newborns, and correctly record any malformations.

Proper diagnosis is important because newborns with cleft lip or cleft palate should be referred immediately to an interdisciplinary core craniofacial team to assess these infants and to counsel the parents prior to discharge.[illegible] Sending infants home without comprehensive instructions for their parents or care givers can seriously compromise the health of the infants. Therefore, children need to be enrolled in a system that provides for continuity of care.[illegible] Although surgical repair of the lips often is performed soon after birth, repair of the palate usually should be delayed for several years to allow maximal facial growth and arch development. Appropriate intervention will minimize the extent to which physical and psychosocial trauma adversely affect child development.

21-16. Increase the number of States and the District of Columbia that have an oral and craniofacial health surveillance system.

Target: All States and the District of Columbia.

Baseline: No States or the District of Columbia had oral and craniofacial health surveillance systems in 1999.

Target setting method: Total coverage.

Data source: Association of State and Territorial Dental Directors.

State and local dental programs have been hampered severely in carrying out their programmatic activities to improve health because of a lack of State-specific oral health data. The existence of surveillance systems within States to assess oral health needs is essential for determining trends in oral diseases, implementing and evaluating interventions, and identifying where resources are required to improve oral health status. Surveillance systems are not just data collection systems, but involve at least (1) a timely communication of findings to responsible parties and to the public and (2) the use of data to initiate and evaluate public health measures to prevent and control diseases and conditions. An oral health surveillance system for a State should contain, at a minimum, a core set of measures that describe the status of important oral health conditions to serve as benchmarks for assessing progress in achieving good oral health.

21-17. (Developmental) Increase the number of Tribal, State (including the District of Columbia), and local health agencies that serve jurisdictions of 250,000 or more persons that have in place an effective public dental health program directed by a dental professional with public health training.

Potential data sources: Association of State and Territorial Dental Directors; IHS.

The ability to improve the health and quality of life for communities and individuals relies on population-based preventive programs and the public and private capacity to provide needed care. The capability to provide services depends on an adequate infrastructure at the Tribal, State, and local health department level. This infrastructure is seriously compromised; for example, in 1999 only 29 States had full-time State dental directors, 14 States had part-time directors, and 8 States had no director. Dental professionals in leadership positions who have public health training are needed in Tribal, State, and local health departments to implement necessary oral health programs. A survey found that two-thirds of 243 local health departments serving nearly 80 million persons in the United States in 1995 reported having a dental program, of which 62 percent were directed by dentists and 22 percent by dental hygienists; the other 16 percent were directed by nondental personnel. The level of public health training of these persons was not assessed.[40]

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-1. Persons with health insurance
1-2. Health insurance coverage for clinical preventive services
1-3. Counseling about health behaviors
1-4. Source of ongoing care
1-7. Core competencies in health provider training
1-8. Racial and ethnic representation in health professions
1-15. Long-term care services

2. Arthritis, Osteopororsis, and Chronic Back Conditions

2-2. Activity limitations due to arthritis
2-3. Personal care limitations
2-7. Seeing a health care provider
2-8. Arthritis education

3. Cancer

3-1. Cancer deaths
3-6. Oropharyngeal cancer deaths
3-9. Sun exposure
3-10. Provider counseling about preventive measures
3-14. Statewide cancer registries
3-15. Cancer survival rates

5. Diabetes

5-1. Diabetes education
5-2. Prevent diabetes
5-3. Reduce diabetes
5-4. Diagnosis of diabetes

6. Disability and Secondary Conditions

6-13. Surveillance and health promotion programs

7. Educational and Community-Based Programs

7-1. High school completion

7-2. School health education

7-3. Health-risk behavior information for college and university students

7-4. School nurse-to-student ratio

7-5. Worksite health promotion programs

7-6. Participation in employer-sponsored health promotion activities

7-7. Patient and family education

7-10. Community health promotion programs

7-11. Culturally appropriate community health promotion programs

7-12. Older adult participation in community health promotion activities

8. Environmental Health

8-5. Safe drinking water

11. Health Communication

11-1. Households with Internet access

11-2. Health literacy

11-3. Research and evaluation of communication programs

11-4. Quality of Internet health information sources

11-6. Satisfaction with providers' communication skills

12. Heart Disease and Stroke

12-1. Coronary heart disease (CHD) deaths

14. Immunization and Infectious Diseases

14-3. Hepatitis B in adults and high-risk groups

14-9. Hepatitis C

14-10. Identification of persons with chronic hepatitis C

14-28. Hepatitis B vaccination among high-risk groups

15. Injury and Violence Prevention

15-1. Nonfatal head injuries

15-17. Nonfatal motor vehicle injuries

15-19. Safety belts

15-20. Child restraints

15-21. Motorcycle helmet use

15-23. Bicycle helmet use

15-24. Bicycle helmet laws

15-31. Injury protection in school sports

16. Maternal, Infant, and Child Health

16-6. Prenatal care

16-8. Very low birth weight infants born at Level III hospitals

16-10. Low birth weight and very low birth weight

16-11. Preterm birth

16-16. Optimum folic acid

16-19. Breastfeeding

16-23. Service systems for children with special health care needs

17. Medical Product Safety

17-3. Provider review of medications taken by patients

17-4. Receipt of useful information from pharmacies

17-5. Receipt of oral counseling from prescribers and dispensers

18. Mental Health and Mental Disorders

18-5. Eating disorder relapses

19. Nutrition and Overweight

19-1. Healthy weight in adults

19-2. Obesity in adults

19-3. Overweight and obesity in children and adolescents

19-5. Fruit intake

19-6. Vegetable intake

19-11. Calcium intake

19-15. Meals and snacks at school

19-16. Worksite promotion of nutrition education and weight management

20. Occupational Safety and Health

20-2. Work-related injuries

20-3. Overexertion or repetitive motion

20-10. Needlestick injuries

22. Physical Activity and Fitness

22-4. Muscular strength and endurance

22-5. Flexibility

23. Public Health Infrastructure

23-1. Public health employee access to Internet

23-2. Public access to information and surveillance data

23-3. Use of geocoding in health data systems

23-4. Data for all population groups

23-6. National tracking of Healthy People 2010 objectives

23-7. Timely release of data on objectives

23-8. Competencies for public health workers

23-9. Training in essential public health services

23-10. Continuing education and training by public health agencies

23-11. Performance standards for essential public health services

23-12. Health improvement plans

23.13. Access to public health laboratory services

23-14. Access to epidemiology services

23-16. Data on public health expenditures

23-17. Prevention research

25. Sexually Transmitted Diseases

25-5. Human papillomavirus infection

26. Substance Abuse

26-12. Average annual alcohol consumption

27. Tobacco Use

27-1. Adult tobacco use

27-2 Adolescent tobacco use

27-3. Initiation of tobacco use

27-4. Age at first use of tobacco

27-5. Smoking cessation by adults

27-7. Smoking cessation by adolescents

27-8. Insurance coverage of cessation treatment

27-11. Smoke-free and tobacco-free schools

27-12. Worksite smoking policies

27-14. Enforcement of illegal tobacco sales to minors laws

27-15. Retail license suspension for sales to minors

27-18. Tobacco control programs

27-19. Preemptive tobacco control laws

27-20. Tobacco product regulation

27-21. Tobacco tax

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Candidiasis (oral): Yeast or fungal infection that occurs in the oral cavity or pharynx or both.

Cleft lip or palate: A congenital opening or fissure occurring in the lip or palate.

Congenital anomaly: An unusual condition existing at, and usually before, birth.

Craniofacial: Pertaining to the head and face.

Dental caries (dental decay or cavities): An infectious disease that results in demineralization and ultimately cavitation of the tooth surface if not controlled or remineralized. Dental cavities may be either treated (filled) or untreated (unfilled).

> **Caries experience:** The sum of filled and unfilled cavities, along with any missing teeth resulting from decay.
>
> **Early childhood caries (ECC):** Dental decay of the primary teeth of infants and young children (aged 1 to 5 years) often characterized by rapid destruction.
>
> **Root caries:** Dental decay that occurs on the root portion of a tooth. (In younger persons, root surfaces are usually covered by gum [gingival] tissue.)

Dentate: A condition characterized by having one or more natural teeth.

Edentulism/edentulous: A condition characterized by not having any natural teeth.

Endocarditis: Inflammation of the lining of the heart.

Fluoride: A compound of the element fluorine. Fluorine, the 13th most abundant element in nature, is used in a variety of ways to reduce dental decay.

Gingivitis: An inflammatory condition of the gum tissue, which can appear reddened and swollen and frequently bleeds easily.

Oral candidiasis: Yeast or fungal infection that occurs in the oral cavity or pharynx or both.

Oral cavity: Mouth.

Oral health literacy: The capacity of an individual to obtain, interpret, and understand basic oral and craniofacial health information and services and the competence to use or not use such information and services in ways that are health enhancing.[52]

Periodontal disease: A cluster of diseases caused by bacterial infections and resulting in inflammatory responses and chronic destruction of the soft tissues and bone that support the teeth. Periodontal disease is a broad term encompassing several diseases of the gums and tissues supporting the teeth.

Pharynx: Throat.

Sealants: Plastic coatings applied to the surfaces of teeth with developmental pits and grooves (primarily chewing surfaces) to protect the tooth surfaces from collecting food, debris, and bacteria that promote the development of dental decay.

Squamous cell carcinoma: A type of cancer that occurs in tissues that line major organs.

Soft tissue lesion: An abnormality of the soft tissues of the oral cavity or pharynx.

Xerostomia: A condition in which the mouth is dry because of a lack of saliva.

References

1. White, B.A.; Weintraub, J.A.; Caplan, D.J.; Hollister, M.C.; and McKaig, R.G. Toward improving the oral health of Americans: An overview of oral health status, resources, and care delivery. *Public Health Reports* 108:657-872, 1993.

2. Reisine, S., and Locker, D. Social, psychological, and economic impacts of oral conditions and treatments. In: Cohen, L.K., and Gift, H.C. (eds.). *Disease Prevention and Oral Health Promotion: Socio-Dental Sciences in Action.* Copenhagen: Munksgaard and la Fédération Dentaire Internationale, 1995, 33-71.

3. Landis, S.H.; Murray, T.; Bolden, S.; and Wingo, P.A. Cancer statistics, 1999. *CA--A Cancer Journal for Clinicians* 49:8-31, 1999.

4. Riley, III, J.W.; Gilbert, G.H.; and Heft, M.W. Orofacial pain symptom prevalence: selected sex differences in the elderly. *Pain* 76:97-104, 1998.

5. Edelstein, B. and Douglass, C. Dispelling the cavity free myth. *Public Health Reports* 110:522-530, 1995.

6. National Center for Health Statistics. *National Health and Nutrition Examination Survey III, 1988-1994.* Hyattsville, MD: Centers for Disease Control and Prevention, unpublished data.

7. Ismail, A.I., and Sohn, W.A. A systematic review of clinical diagnostic criteria of early childhood caries. *Journal of Public Health Dentistry* 59(3):171-191, 1999.

8. Milnes, A.R. Description and epidemiology of nursing caries. *Journal of Public Health Dentistry* 56:38-50, 1996.

9. Horowitz, H.S. Research issues in early childhood caries. *Community Dentistry and Oral Epidemiology* 26(suppl.1):67-81, 1998.

10. Reisine, S., and Douglass, J.M. Psycho social and behavioral issues in early childhood caries. *Community Dentistry and Oral Epidemiology 26*:(suppl.1):32-34, 1998.

11. Vargas, C.M.; Crall, J.J.; Schneider, D.A. Sociodemographic distribution of pediatric dental caries: NHANES III, 1988-1994. *Journal of the American Dental Association* 129:1229-1238, 1998.

12. Kaste, L.S.; Selwitz, R.H.; Oldakowski, R.J.; Brunelle, J.A.; Winn, D.M.; and Brown, L.J. Coronal caries in the primary and permanent dentition of children and adolescents 1-17 years of age: United States, 1988-1991. *Journal of Dental Research* 75:631-641, 1996.

13. National Institute of Dental Research. *Adults: The National Survey of Oral Health in U.S. Employed Adults and Senior: 1985-1986.* NIH Pub. No. 87-2868. Bethesda, MD: National Institutes of Health, 1986.

14. American Cancer Society. *Cancer Facts and Figures 1998.* Atlanta, GA: the Agency, 1998.

15. Horowitz, A.M., and Nourjah, P.A. Patterns of screening for oral cancer among U.S. adults. *Journal of Public Health Dentistry* 56:331-335, 1996.

16. Slavkin, H.C. Meeting the challenges of craniofacial-oral-dental birth defects. *Journal of the American*

Dental Association 127:126-137, 1998.

17. Tolarova, M., and Cervenka, J. Classification and birth prevalence of orofacial clefts. *American Journal of Medical Genetics* 75:126-137, 1998.

18. Dasanayake, A.P. Poor periodontal health of the pregnant woman as a risk factor for low birth weight. *Annals of Periodontology* 3:206-211, 1998.

19. Offenbacher, S.; Katz, V.; Fertik, G.; et al. Periodontal infection as a possible risk factor for preterm low birth weight. *Annals of Periodontology* 67(suppl.10):1103-1113, 1995.

20. Davenport, E.S.; Willias, C.E.; Sterne, J.A.; et al. The East London study of materal chronic periodontal disease and preterm low birth weight infants: study design and prevalence data. *Annals of Periodontology* 3:213-221, 1998.

21. Beck, J.D.; Offenbacher, S.; Williams, R.; Gibbs, P.; and Garcia, R. Periodontitis: A risk factor for coronary heart disease? *Annals of Periodontology* 3:127-141, 1998.

22. Genco, R.J. Periodontal disease and risk for myocardial infarction and cardiovascular disease. *Cardiovascular Reviews and Reports* 19:34-40, 1998.

23. Slavkin, H.C. Does the mouth put the heart at risk? *Journal of the American Dental Association* 130:109-113, 1999.

24. Genco, R.J. Current view of risk factors for periodontal diseases. *Journal of Periodontology* 67(suppl.):1041-1049, 1996.

25. Dajani, A.S.; Taubert, K.A.; Wilson, W.; Bolger, A.F.; Bayer, A.; Ferrieri, P.; Gewitz, M.H.; Schulman, S.T.; Gage, T.W.; Levison, M.E.; Peter, G.; Zuccaro, Jr., G. Prevention of bacterial endocarditis: Recommendations by the American Heart Association. *Journal of the American Dental Association* 128:1142-1151, 1997.

26. American Dental Association. *Survey on Pre-Doctoral Dental Education Institutions, 1996-1997: Volume I, Academic Programs Enrollment and Graduates*. Chicago, IL: the Association, May 1997.

27. Burt, B.A. Trends in caries prevalence in North American children. *International Dental Journal* 44(4 suppl.1):403-413, 1994.

28. National Center for Health Statistics. *Healthy People 2000 Review, 1998-99*. Hyattsville, MD: Public Health Service, 1998.

29. Hinman, A.R.; Sterritt, G.R.; and Reeves, T.R. The U.S. experience with fluoridation. *Community Dental Health* 13(suppl.2): 5-9, 1996.

30. National Institutes of Health. *SEER Cancer Statistics Review 1973-1996*. Bethesda, MD, 1999 National Cancer Institute, NIH. Retrieved June 15, 1999 <http://www.seer.ims.nci.nih.gov/Publications/CSR1973_1996>.

31. Palmer, C. Dental spending exceeds $50 billion. *American Dental Association News* 29(22):1, 30, 1998.

32. Benson, V., and Marano, M.A. Current Estimates from the National Health Interview Survey, 1995. National Center for Health Statistics. *Vital Health Statistics* 10(199), 1998.

33. CDC. National Health Interview Survey 1997. Unpublished data. Hyattsville, MD: CDC.

34. Horowitz, A.M.; Goodman, H.S.; Yellowitz, J.A.; and Nourjah, P.A. The need for health promotion in oral cancer prevention and early detection. *Journal of Public Health Dentistry* 56:319-330, 1996.

35. American Dental Association, and the Centers for Disease Control and Prevention (CDC), National Institutes of Health. *Proceedings: National Strategic Planning Conference for the Prevention and Control of Oral and Pharyngeal Cancer*. Atlanta, GA: the Centers, 1997.

36. U.S. Department of Health and Human Services, Office of Inspector General. *Children's Dental Services Under Medicaid: Access and Utilization*. Pub. No. OEI-09-93-00240. Washington, DC: the Agency, 1996. Retrieved November 23, 1999. <http://www.dhhs.gov/progorg/oei/reports/a10.pdf>.

37. Eklund, S.A; and Burt, B.A. Risk factors for total tooth loss in the United States: Longitudinal analysis of national data. *Journal of Public Dentistry* 54:5-14, 1994.

38. Burt, B.A; Eklund, S.A. Dentistry, Dental Practice, and the Community, 5th ed. Philadelphia, PA: W.B. Saunders, Co., 1999, 204.

39. Burt, B.A., and Eklund, S.A. Dentistry, Dental Practice, and the Community. 5th ed. Philadelphia, PA: W.B. Saunders, Co., 1999, 205-206.

40. CDC. Total tooth loss among persons aged 65 years–selected States, 1995-97. *Morbidity and Mortality Weekly Report* 48:206-210, 1999.

41. Consensus report on periodontal diseases: epidemiology and diagnosis. *Annals of Periodontology* 1:216-222, 1996.

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42. Burt, B.A., and Eklund, S.A. Dentistry, Dental Practice, and the Community, 5th ed. Philadelphia, PA: W.B. Saunders, Co., 1999, 237-238.

43. Silverman, S. Oral Cancer. 4th ed. Hamilton, Ontario, Canada: American Cancer Society, B.C. Decker, Inc., 1998.

44. Goodman, H.S.; Yellowitz, J.A.; and Horowitz, A.M. Oral cancer prevention: the role of family practitioners. *Archives of Family Medicine* 4:628-636, 1995.

45. CDC. Fluoridation of Drinking Water to Prevent Dental Caries. *Morbidity and Mortality Weekly Report* 48(41):933-940, 1999.

46. Institute of Medicine, Committee on Comprehensive School Health Programs, Division of Health Sciences Policy. Allensworth, D.; Lawson, E.; Nicholson, L.; Wyche, J. (eds.). *Schools and Health*. Washington, DC: National Academic Press, 1997.

47. School of Public Health and Health Services, The George Washington University. Making the Grade: National Survey of State School-Based Health Centers Initiatives School Year 1997-98. Washington, DC: George Washington University. Retrieved January 29, 1999 <http://www.gwu.edu/~mtg/sbhc/98summ.html>.

48. Manski, R.J.; Moeller, J.F.; and Maas, W.R. Health expenditures: A comparison between dental expenditures and office-based medical expenditures, 1987. *Journal of the American Dental Association* 5:659-666, 1999.

49. Lockwood, S.A. Characterization of dental programs administered by U.S. city/county health departments, 1995. Presented before the annual session of the American Association for Public Health Dentistry in Washington, DC, October 15, 1997.

50. Brown, L.J., and Lazar, V. Minority dentists: why do we need them? Closing the Gap. U.S. Government Printing Office no: 1999-721-913/94337, Washington, DC: Office of Minority Health, 1999.

51. Montoya, R.; Hayes-Bautista, D.; Gonzales, I.; and Smeloff, E. Minority dental school graduates: do they serve minority communities? *American Journal of Public Health* 68(10):1017-1019, 1978.

22

Physical Activity and Fitness

Co-Lead Agencies: Centers for Disease Control and Prevention;
President's Council on Physical Fitness and Sports

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Goal

Improve health, fitness, and quality of life through daily physical activity.

Overview

The 1990s brought a historic new perspective to exercise, fitness, and physical activity by shifting the focus from intensive vigorous exercise to a broader range of health-enhancing physical activities. Research has demonstrated that virtually all individuals will benefit from regular physical activity.[1] The *Surgeon General's Report on Physical Activity and Health* concluded that moderate physical activity can reduce substantially the risk of developing or dying from heart disease, diabetes, colon cancer, and high blood pressure.[1] Physical activity also may protect against lower back pain and some forms of cancer (for example, breast cancer), but the evidence is not yet conclusive.[2, 3]

Issues and Trends

On average, physically active people outlive those who are inactive.[4, 5, 6, 7, 8] Regular physical activity also helps to maintain the functional independence of older adults and enhances the quality of life for people of all ages.[9, 10, 11]

The role of physical activity in preventing coronary heart disease (CHD) is of particular importance, given that this disease is the leading cause of death and disability in the United States. Physically inactive people are almost twice as likely to develop CHD as persons who engage in regular physical activity. The risk posed by physical inactivity is almost as high as several well-known risk factors, such as cigarette smoking, high blood pressure, and high blood cholesterol. Physical inactivity, though, is more prevalent than any one of these other risk factors. People with other risk factors for CHD, such as obesity and high blood pressure, may particularly benefit from physical activity.

Regular physical activity is especially important for people who have joint or bone problems and has been shown to improve muscle function, cardiovascular function, and physical performance.[12] However, people with arthritis (20 percent of the adult population) are less active than those without arthritis.[13] People with osteoporosis, a chronic condition affecting more than 25 million people in the United States, may respond positively to regular physical activity, particularly weight-bearing activities—such as walking[14] and especially when combined with appropriate drug therapy and calcium intake. Increased bone mineral density has been positively associated with aerobic fitness, body composition, and muscular strength.[15]

Although vigorous physical activity is recommended for improved cardiorespiratory fitness, increasing evidence suggests that moderate physical activity also can have significant health benefits, including a decreased risk of CHD. For people who are inactive, even small increases in physical activity are associated with measurable health benefits. In addition, moderate physical activity is more readily adopted and maintained than vigorous physical activity.[10] As research continues to illustrate the links between physical activity and selected health outcomes, people will be able to choose physical activity patterns optimally suited to individual preferences, health risks, and physiologic benefits.

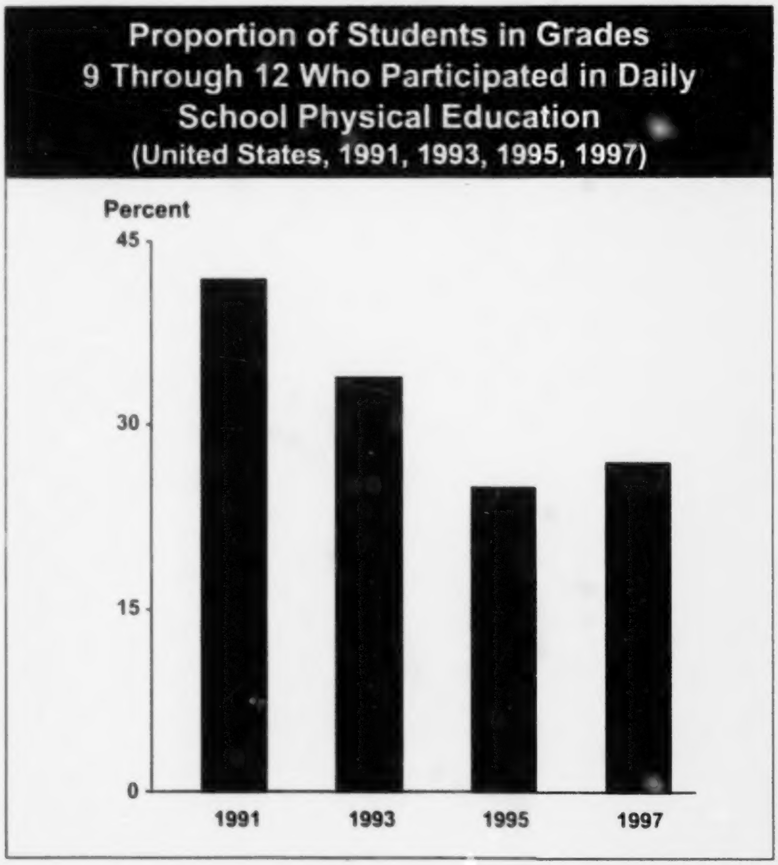
For individuals who do not engage in any physical activity during their leisure time, taking the first step toward developing a pattern of regular physical activity is important. Unfortunately, few individuals engage in regular physical activity despite its documented benefits. Only about 11 percent of adults in the United States report regular, vigorous physical activity that involves large muscle groups in dynamic movement for 20 minutes or longer 3 or more days per week. About 23 percent of adults report physical activity for 5 or more days per week for 30 minutes or longer, but another 23 percent do not participate in any regular physical activity.

Public education efforts need to address the specific barriers that inhibit the adoption and maintenance of physical activity by different population groups. Older adults, for example, need information about safe walking routes. Persons with foot problems need to learn about proper foot care and footwear in order to reach appropriate activity levels. People with CHD and other chronic conditions must understand the importance of regular physical activity to maintain function. Each person should recognize that starting out slowly with an activity that is enjoyable and gradually increasing the frequency and duration of the activity is central to the adoption and maintenance of physical activity behavior. Along with the public education efforts, public programs in a variety of settings (recreation centers, worksites, health care settings, and schools) need to be developed, evaluated, and shared as potential models. The availability of group activities in the community is important for many.

Disparities

Disparities in levels of physical activity exist among population groups. The percentage of the population reporting no leisure-time physical activity is higher among women than men, among African Americans and Hispanics than whites, among older adults than younger adults, and among the less affluent than the more affluent. Participation in all types of physical activity declines strikingly as age or grade in school increases. In general, persons with lower levels of education and income are least active in their leisure time. Adults in North Central and Western States tend to be more active than those in the Northeastern and Southern States. People with disabilities and certain health conditions are less likely to engage in moderate or vigorous physical activity than are people without disabilities. Health promotion efforts need to identify barriers to physical activity faced by particular population groups and develop interventions that address these barriers.[1]

Data demonstrate that major decreases in vigorous physical activity occur during grades 9 through 12. This decrease is more profound for girls than for boys, whether the measure is engaging in vigorous physical activity in general or in team sports. The President's Council on Physical Fitness and Sports concluded that because of its physical health and emotional benefits, physical activity has an increasingly important role in the lives of girls.[17] Adolescents' interest and participation in physical activity differ by gender.[17] Therefore, strategies to increase the amount of physical activity for boys and girls must address these differences and must begin before the disparities in levels of physical activity manifest themselves. Compared to boys, girls are less likely to participate in team sports but more likely to participate in aerobics or dance. Often girls and boys perceive different benefits from physical activity, with boys viewing such activity as competition and girls as weight management. These factors must be considered in developing programs to address the needs of girls. Since boys are more likely than girls to have higher self-esteem and greater physical strength, programs addressing


Proportion of Students in Grades 9 Through 12 Who Participated in Daily School Physical Education
(United States, 1991, 1993, 1995, 1997)

Source: CDC, NCHS. *Healthy People 2000 Review, 1989–99*, p. 33.

the needs of girls should provide instruction and experiences that increase their confidence and their opportunities to participate in activities, as well as social environments that support involvement in a range of physical activities.[17]

Opportunities

The Healthy People 2010 objectives offer opportunities to ensure that physical activity and fitness become part of regular, healthy behavioral patterns. Encouraging any type or amount of physical activity in leisure time can provide important health benefits, compared to a sedentary lifestyle.

Activities that promote strength and flexibility are important because they may protect against disability, enhance functional independence, and encourage regular physical activity participation. These benefits are particularly important for older people—a good quality of life means being functionally independent and being able to perform the activities of daily living.

Young people are at particular risk for becoming sedentary as they grow older. Therefore, encouraging moderate and vigorous physical activity among youth is important. Because children spend most of their time in school, the type and amount of physical activity encouraged in schools are important components.

The major barriers most people face when trying to increase physical activity are time, access to convenient facilities, and safe environments in which to be active. Counseling by primary care providers about the need to participate in physical activity also is an important way to change behavior. In addition, facilities need to be accessible to people with disabilities.

Interim Progress Toward Year 2000 Objectives

Of the 13 physical activity and fitness objectives, 1 has been met—increasing worksite fitness programs. Four objectives show solid gains, indicating that the message about increased physical activity is reaching some segments of the population. The message that sedentary lifestyle plays a role in both overweight and weight loss needs to be addressed better, as does the role primary care providers can play in counseling individuals to increase their daily activities. Both the quantity and quality of school physical education have slipped. Data to evaluate access and availability of community fitness facilities were not available.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Healthy People 2010—Summary of Objectives

Physical Activity and Fitness

Goal: Improve health, fitness, and quality of life through daily physical activity.

Number	Objective
Physical Activity in Adults	
22-1	No leisure-time physical activity
22-2	Moderate physical activity
22-3	Vigorous physical activity
Muscular Strength/Endurance and Flexibility	
22-4	Muscular strength and endurance
22-5	Flexibility
Physical Activity in Children and Adolescents	
22-6	Moderate physical activity in adolescents
22-7	Vigorous physical activity in adolescents
22-8	Physical education requirement in schools
22-9	Daily physical education in schools
22-10	Physical activity in physical education class
22-11	Television viewing
Access	
22-12	School physical activity facilities
22-13	Worksite physical activity and fitness
22-14	Community walking
22-15	Community bicycling

Physical Activity in Adults

22-1. Reduce the proportion of adults who engage in no leisure-time physical activity.

Target: 20 percent.

Baseline: 40 percent of adults aged 18 years and older engaged in no leisure-time physical activity in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1997	No Leisure-Time Physical Activity Percent
TOTAL	40
Race and ethnicity	
American Indian or Alaska Native	46
Asian or Pacific Islander	42
Asian	42
Native Hawaiian and other Pacific Islander	41
Black or African American	52
White	38
Hispanic or Latino	54
Not Hispanic or Latino	38
Black or African American	52
White	36
Gender	
Female	43
Male	36

Adults Aged 18 Years and Older, 1997	No Leisure-Time Physical Activity Percent
Age	
18 to 24 years	31
25 to 44 years	34
45 to 64 years	42
65 to 74 years	51
75 years and older	65
Education level (aged 25 years and older)	
Less than 9th grade	73
Grades 9 through 11	59
High school graduate	46
Some college or AA degree	35
College graduate or above	24
Geographic location	
Urban	39
Rural	43
Disability status	
Persons with disabilities	56
Persons without disabilities	36
Select populations	
Persons with arthritis symptoms	43
Persons without arthritis symptoms	38

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

22-2. Increase the proportion of adults who engage regularly, preferably daily, in moderate physical activity for at least 30 minutes per day.

Target: 30 percent.

Baseline: 15 percent of adults aged 18 years and older were active for at least 30 minutes 5 or more days per week in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1997	**22-2. 30 Minutes of Activity 5 or More Days per Week**	**20 Minutes of Activity 3 or More Days per Week***
	Percent	
TOTAL	15	31
Race and ethnicity		
American Indian or Alaska Native	13	25
Asian or Pacific Islander	15	30
Asian	15	30
Native Hawaiian and other Pacific Islander	11	31
Black or African American	10	23
White	15	32
Hispanic or Latino	11	23
Not Hispanic or Latino	15	32
Black or African American	10	22
White	16	33
Gender		
Female	13	30
Male	16	31
Age		
18 to 24 years	17	36
25 to 44 years	15	31
45 to 64 years	14	30
65 to 74 years	16	31
75 years and older	12	23
Education level (aged 25 years and older)		
Less than 9th grade	7	13
Grades 9 through 11	11	21
High school graduate	14	28
Some college or AA degree	17	34
College graduate or above	17	38
Geographic location		
Urban	15	31
Rural	15	30

Adults Aged 18 Years and Older, 1997	22-2. 30 Minutes of Activity 5 or More Days per Week	20 Minutes of Activity 3 or More Days per Week*
	Percent	
Disability status		
Persons with disabilities	12	23
Persons without disabilities	16	33
Select populations		
Persons with arthritis symptoms	15	29
Persons without arthritis symptoms	15	32

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*Data for 20 minutes of activity 3 or more days per week are displayed to further characterize the issue.

22-3. Increase the proportion of adults who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion.

Target: 30 percent.

Baseline: 23 percent of adults aged 18 years and older engaged in vigorous physical activity 3 or more days per week for 20 or more minutes per occasion in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1997	Vigorous Physical Activity
	Percent
TOTAL	23
Race and ethnicity	
American Indian or Alaska Native	19
Asian or Pacific Islander	17
Asian	16
Native Hawaiian and other Pacific Islander	24
Black or African American	17
White	24

Adults Aged 18 Years and Older, 1997	Vigorous Physical Activity Percent
Hispanic or Latino	16
Not Hispanic or Latino	24
Black or African American	17
White	25
Gender	
Female	20
Male	26
Age	
18 to 24 years	32
25 to 44 years	27
45 to 64 years	21
65 to 74 years	13
75 years and older	6
Education level (aged 25 years and older)	
Less than 9th grade	6
Grades 9 through 11	12
High school graduate	18
Some college or AA degree	24
College graduate and above	32
Geographic location	
Urban	24
Rural	21
Disability status	
Persons with disabilities	13
Persons without disabilities	25
Select populations	
Persons with arthritis symptoms	21
Persons without arthritis symptoms	24

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.

The adoption and maintenance of regular physical activity represent an important component of any health regime and provide multiple opportunities to improve and maintain health. Because the highest risk of death and disability is found among those who do no regular physical activity, engaging in any amount of physical activity is preferable to none. Physical activity should be encouraged as part of a daily routine. While moderate physical activity for at least 30 minutes is preferable, intermittent physical activity also increases caloric expenditure and may be important for those who cannot fit 30 minutes of sustained activity into their daily schedules. For even greater health benefits, vigorous physical activity is necessary. For most persons, the greatest opportunity for physical activity is associated with leisure time, because few occupations today provide sufficient vigorous or moderate physical activity to produce health benefits.

Engaging in moderate physical activity for at least 30 minutes per day will help ensure that sufficient calories are used to provide health benefits. A minimum level of intensity (for example, a brisk walk for 30 minutes per day) would, for most persons, result in an energy expenditure of about 600 to 1,100 calories per week.[18] If calorie intake remains constant, this expenditure translates into a weight loss of roughly one-sixth to one-third pound per week. Increases in daily activity to ensure a weekly expenditure of 1,000 calories would have significant individual and public health benefit for CHD prevention and death from all causes, especially for persons who are sedentary. Furthermore, this level of activity is feasible for most persons even though the relative intensity of any activity will vary by age. Starting out slowly and gradually increasing the frequency and duration of physical activity is the key to successful behavior change. In the case of walking, the message becomes, "If you are not used to daily walking, then walk slowly and take short, frequent walks, gradually increasing distance and speed."

Muscular Strength/Endurance and Flexibility

22-4. Increase the proportion of adults who perform physical activities that enhance and maintain muscular strength and endurance.

Target: 30 percent.

Baseline: 19 percent of adults aged 18 years and older performed physical activities that enhance and maintain strength and endurance 2 or more days per week in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years or Older, 1997	**Strengthening Exercises** Percent
TOTAL	19
Race and ethnicity	
American Indian or Alaska Native	17
Asian or Pacific Islander	18
Asian	17
Native Hawaiian and other Pacific Islander	22
Black or African American	17
White	20
Hispanic or Latino	13
Not Hispanic or Latino	20
Black or African American	17
White	21
Gender	
Female	16
Male	23
Age	
18 to 24 years	30
25 to 44 years	22
45 to 64 years	16
65 to 74 years	11
75 years and older	8
Education level (aged 25 years and older)	
Less than 9th grade	5
Grades 9 through 11	9
High school graduate	13
Some college or AA degree	20
College graduate and above	28
Geographic location	
Urban	21
Rural	16
Disability status	
Persons with disabilities	14
Persons without disabilities	20

Adults Aged 18 Years or Older, 1997	Strengthening Exercises Percent
Select populations	
Persons with arthritis symptoms	19
Persons without arthritis symptoms	20

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

22-5. Increase the proportion of adults who perform physical activities that enhance and maintain flexibility.

Target: 40 percent.

Baseline: 30 percent of adults aged 18 years and older did stretching exercises in the past 2 weeks in 1995 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1995	Stretching Exercises Percent
TOTAL	30
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	31
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	28
White	30
Hispanic or Latino	25
Not Hispanic or Latino	31
Black or African American	28
White	31
Gender	
Female	31
Male	29

Adults Aged 18 Years and Older, 1995	**Stretching Exercises** Percent
Age	
18 to 24 years	39
25 to 44 years	34
45 to 64 years	27
65 to 74 years	22
75 years and older	21
Family income level	
Below poverty	24
Near poverty	26
Middle/high income	34
Education level (aged 25 years and older)	
Less than high school	16
High school graduate	25
At least some college	37
Geographic location	
Urban	32
Rural	25
Disability status	
Persons with activity limitations	29
Persons without activity limitations	31
Select populations	
Persons with arthritis symptoms	DNA
Persons without arthritis symptoms	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

All adults could benefit from physical activities designed to ensure functional independence throughout life. The specific physical fitness components that provide continued physical function as persons age include muscular strength/endurance and flexibility. Examples of these activities include weight training, resistance activities (using elastic bands or dumbbells), and stretching exercises (such as static stretching, yoga, or T'ai Chi Chuan).

Effective treatment of many chronic diseases and disorders has resulted in more years of life, but many of these extra years are spent with disabling conditions that prevent independent living and reduce the quality of life. Strengthening activities, while important for all age groups, are particularly important for older adults.

Muscle strength declines with age, and there is a demonstrated relationship between muscle strength and physical function.[19] Age-related loss of strength may be lessened by strengthening exercises, enabling an individual to maintain a threshold level of strength necessary to perform basic weight-bearing activities, such as walking.[20, 21] Strength training also has been shown to preserve bone density in postmenopausal women.[22]

Physical activities that improve muscular strength/endurance and flexibility also improve the ability to perform tasks of daily living and may improve balance, thus preventing falls.[1] Activities of daily living have been identified as a scale to measure dependencies in basic self-care and other functions important for independent living and to avoid institutionalization. The performance of routine daily activities is particularly important to maintaining functional independence and social integration in older adults.[11]

Although flexibility may appear to be a minor component of physical fitness, the consequence of rigid joints affects all aspects of life, including walking, stooping, sitting, avoiding falls, and driving a vehicle. Lack of joint flexibility may adversely affect quality of life and will lead to eventual disability.[23] Activities such as static stretching or T'ai Chi Chuan routines, which consist of slow, graceful movements with low impact, have great promise for maintaining flexibility and can be appropriate for adults of any age.[24] Increasing public awareness of all these potential benefits of muscle strengthening and flexibility activities—and developing and making quality programs available and accessible—may encourage the pursuit of activities that promote muscular strength/endurance and flexibility.

Physical Activity in Children and Adolescents

22-6. Increase the proportion of adolescents who engage in moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days.

Target: 30 percent.

Baseline: 20 percent of students in grades 9 through 12 engaged in moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days in 1997.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Students in Grades 9 Through 12, 1997	Moderate Physical Activity 22-6. Both Genders	 Females*	 Males*
	Percent		
TOTAL	20	20	21
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	27	25	28
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	28	27	29
White	17	16	18
Grade			
9th grade	28	28	29
10th grade	22	21	24
11th grade	17	17	18
12th grade	15	14	15
Parents' education level			
Less than high school	25	25	24
High school graduate	21	20	21
At least some college	20	19	20

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

22-7. Increase the proportion of adolescents who engage in vigorous physical activity that promotes cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion.

Target: 85 percent.

Baseline: 64 percent of students in grades 9 through 12 engaged in vigorous physical activity 3 or more days per week for 20 or more minutes per occasion in 1997.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Students in Grades 9 Through 12, 1997	**Vigorous Physical Activity**		
	22-7. Both Genders	**Females***	**Males***
	Percent		
TOTAL	64	54	72
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	60	50	69
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	54	41	67
White	67	58	73
Grade			
9th grade	73	66	79
10th grade	66	56	74
11th grade	60	49	69
12th grade	58	44	68

Students in Grades 9 Through 12, 1997	Vigorous Physical Activity		
	22-7. Both Genders	Females*	Males*
	Percent		
Parents' education level			
Less than high school	50	43	60
High school graduate	54	45	62
At least some college	68	57	75

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

22-8. Increase the proportion of the Nation's public and private schools that require daily physical education for all students.

Objective	Increase in Schools Requiring Daily Physical Activity for All Students	1994 Baseline	2010 Target
		Percent	
22-8a	Middle and junior high	17	25
22-8b.	Senior high	2	5

Target setting method: 47 percent improvement for middle and junior high schools; 150 percent improvement for senior high schools.

Data source: School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP.

22-9. Increase the proportion of adolescents who participate in daily school physical education.

Target: 50 percent.

Baseline: 27 percent of students in grades 9 through 12 participated in daily school physical education in 1997.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Students in Grades 9 Through 12, 1997	Daily School Physical Education 22-9. Both Genders	 Females*	 Males*
	Percent		
TOTAL	27	25	30
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	38	37	39
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	33	28	37
White	24	21	26
Grade			
9th grade	43	42	43
10th grade	31	28	33
11th grade	19	16	23
12th grade	19	14	23
Parents' education level			
Less than high school	29	28	30
High school graduate	24	22	27
At least some college	28	25	30

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

22-10. Increase the proportion of adolescents who spend at least 50 percent of school physical education class time being physically active.

Target: 50 percent.

Baseline: 32 percent of students in grades 9 through 12 were physically active in physical education class more than 20 minutes 3 to 5 days per week in 1997.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Students in Grades 9 Through 12, 1997	**Physically Active in Physical Education Classes**		
	22-10. Both Genders	**Females***	**Males***
		Percent	
TOTAL	32	27	36
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DNC	DNC	DNC
Asian	DSU	DSU	DSU
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	36	33	39
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	31	25	37
White	31	27	35
Grade			
9th grade	47	43	50
10th grade	35	30	40
11th grade	24	17	29
12th grade	24	17	29
Parents' education level			
Less than high school	28	25	32
High school graduate	29	24	35
At least some college	33	27	37

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

22-11. Increase the proportion of children and adolescents who view television 2 or fewer hours per day.

Target: 75 percent.

Baseline: 60 percent of persons aged 8 to 16 years viewed television 2 or fewer hours per day in 1988-94.

Target setting method: Better than the best.

Data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; after 2000, Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Children and Adolescents Aged 8 to 16 Years, 1988-94	**Television 2 or Fewer Hours Per Day** Percent
TOTAL	60
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	43
White	63
Hispanic or Latino	DSU
Mexican American	53
Not Hispanic or Latino	DNA
Black or African American	42
White	65
Gender	
Female	64
Male	54
Family income level	
Poor	53
Near poor	54
Middle/high income	64

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The health benefits of moderate and vigorous physical activity are not limited to adults. Physical activity among children and adolescents is important because of the related health benefits (cardiorespiratory function, blood pressure control, and weight management) and because a physically active lifestyle adopted early in life may continue into adulthood. Even among children aged 3 to 4 years, those who were less active tended to remain less active than most of their peers after age 3 years.[25] These findings highlight the need for parents, educators, and health care providers to become positive role models and to be involved actively in the promotion of physical activity and fitness in children and adolescents.

Many children are less physically active than recommended, and physical activity declines during adolescence.[26, 27] One study found that one-quarter of U.S. children spend 4 hours or more watching television daily.[28] Schools are an efficient vehicle for providing physical activity and fitness instruction because they reach most children and adolescents. Participation in school physical education ensures a minimum amount of physical activity and provides a forum to teach physical activity strategies and activities that can be continued into adulthood. Findings suggest that the quantity and, in particular, the quality of school physical education programs have a significant positive effect on the health-related fitness of children and adolescents by increasing their participation in moderate to vigorous activities.[29, 30]

Studies have shown that spending 50 percent of physical education class time on physical activity is an ambitious but feasible target. Being active for at least half of physical education class time on at least half of the school days would provide a substantial portion of the physical activity time recommended for adolescents.[31] To achieve the benefits of school-based physical education equitably for all children, daily adaptive physical education programs should be available for children with special needs. School physical education requirements also are recommended for students in preschool and postsecondary programs.[32]

Physical education is the primary source of physical activity and fitness instruction. Health education and other courses, however, can highlight the importance of physical activity as a component of a healthy lifestyle. A well-designed health education curriculum can help students develop the knowledge, attitudes, behavioral skills, and confidence needed to adopt and maintain physically active lifestyles.[32] To maximize classroom time, instruction on physical activity also can be integrated into the lesson plans of other school subjects, such as mathematics, biology, and language arts. Programs that have included classroom instruction in physical activity have been effective in enhancing students' physical activity-related knowledge,[33] attitudes,[34] behavior,[35] and physical fitness.[36] (See Focus Area 7. Educational and Community-based Programs.)

Access

22-12. (Developmental) Increase the proportion of the Nation's public and private schools that provide access to their physical activity spaces and facilities for all persons outside of normal school hours (that is, before and after the school day, on weekends, and during summer and other vacations).

Potential data source: School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP.

22-13. Increase the proportion of worksites offering employer-sponsored physical activity and fitness programs.

Target: 75 percent.

Baseline: In 1998-99:

Worksite Size	Worksite	Health Plan	Worksite or Health Plan
		Percent	
<50 employees		**Developmental**	
50 to 99 employees	24	21	38
100 to 249 employees	31	20	42
250 to 749 employees	44	25	56
750+ employees	61	27	68
Total (50+)	36	22	46

Target setting method: Better than the best.

Data source: 1999 National Worksite Health Promotion Survey, Association for Worksite Health Promotion (AWHP).

Participation in regular physical activity depends, in part, on the availability and proximity of community facilities and on environments conducive to physical activity. Studies of adult participation in physical activity have found that use generally decreases as facility distance from a person's residence increases.[37] People are unlikely to use community resources located more than a few miles away by car or more than a few minutes away by biking or walking.

One of the major barriers to youth participation in sports is lack of enough sports facilities.[38] Increased access to community physical activity facilities would, therefore, help facilitate increases in youth physical activity. The availability of school facilities for physical activity programs also may be beneficial for crime and violence prevention and other social programs,[38] because most juvenile crime is committed between 3 and 8 p.m.

Schools need to work with community coalitions and community-based physical activity programs to take maximum advantage of school facilities for the benefit of children and adolescents and the community as a whole. The needs of all community members, including senior citizens and persons with disabilities, need to be considered.

Worksite physical activity and fitness programs provide a mechanism for reaching large numbers of adults and have at least short-term effectiveness in increasing the physical activity and fitness of program participants.[39] Such programs should be provided in a culturally and linguistically competent manner. Evidence that worksite programs are cost-effective is growing. Such programs may even reduce employer costs for insurance premiums, disability benefits, and medical expenses.[40] Additional benefits for employers include increased productivity, reduced absenteeism, reduced employee turnover, improved morale, enhanced company image, and enhanced recruitment. Including family members and retirees in worksite programs can further increase benefits to employers and the community.[41]

As purchasers of group health and life insurance plans, employers can design employee benefit packages that include coverage for fitness club membership fees and community-based fitness classes. Employers also can offer reduced insurance premiums and rebates for employees who participate regularly in worksite fitness programs or who can document regular physical activity.

22-14. Increase the proportion of trips made by walking.

Target and baseline:

Objective	Increase in Trips Made by Walking	Activity	1995 Baseline	2010 Target
			Percent	
22-14a.	Adults aged 18 years and older	Trips less than 1 mile	16	25
22-14b.	Children and adolescents aged 5 to 15 years	Trips to school less than 1 mile	28	50

Target setting method: Better than the best will be used when data are available.

Data source: National Personal Transportation Survey (NPTS), U.S. Department of Transportation.

Data for population groups currently not collected.

Walking is a very popular form of physical activity in the United States; however, people need the opportunity to walk safely. Over 75 percent of all trips less than 1 mile were made by automobile in 1995.[41] In addition, the number of walking trips as a percentage of all trips taken (of any distance) has declined over the years.

Walking trips made by adults walking dropped from 9.3 percent in 1977 to 7.2 percent in 1990 and again to 5.4 percent in 1995. Walking has declined even more sharply for children.[42] These declines have wide implications for the health of adults and children.

22-15. Increase the proportion of trips made by bicycling.

Target and baseline:

Objective	Increase in Trips Made by Bicycling	Activity	1995 Baseline	2010 Target
			Percent	
22-15a.	Adults aged 18 years and older	Trips less than 5 miles	0.6	2.0
22-15b.	Children and adolescents aged 5 to15 years	Trips to school less than 2 miles	2.2	5.0

Target setting method: Better than the best will be used when data are available.

Data source: National Personal Transportation Survey (NPTS), U.S. Department of Transportation.

Data for population groups currently not collected.

Bicycling is another form of transportation that may be used by both children and adults to cover distances that may not be feasible by walking. If the environment does not provide safe opportunities for physical activities such as walking and bicycling, adults and children likely will spend more time doing sedentary activities indoors. (See Focus Area 8. Environmental Health.) Sedentary activities, such as watching television, playing video games, and using personal computers, have contributed to increases in the cases of overweight individuals.[28]

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-2. Health insurance coverage for clinical preventive services

1-3. Counseling about health behaviors

2. Arthritis, Osteoporosis, and Chronic Back Conditions

2-2. Activity limitations due to arthritis

2-3. Personal care limitations

2-8. Arthritis education

2-9. Cases of osteoporosis

2-11. Activity limitations due to chronic back conditions

3. Cancer

3-5. Colorectal cancer deaths

3-7. Prostate cancer deaths

3-9. Sun exposure

3-10. Provider counseling about preventive measures

4. Chronic Kidney Disease

4-8. Medical therapy for persons with diabetes and proteinuria

5. Diabetes

5-1. Diabetes education

5-2. Prevent diabetes

5-3. Reduce diabetes

5-4. Diagnosis of diabetes

5-5. Diabetes deaths

5-6. Diabetes-related deaths

5-7. Cardiovascular deaths in persons with diabetes

6. Disability and Secondary Conditions

6-2. Feelings and depression among children with disabilities

6-3. Feelings and depression interfering with activities among adults with disabilities

6-4. Social participation among adults with disabilities

6-9. Children and youth with disabilities included in regular education programs

6-10. Accessibility of health and wellness programs

6-12. Environmental barriers affecting participation

6-13. Surveillance and health promotion programs

7. Educational and Community-Based Programs

7-2. School health education

7-3. Health-risk behavior information for college and university students

7-5. Worksite health promotion programs

7-6. Participation in employee-sponsored health promotion activities

7-7. Patient and family education

7-9. Health care organization sponsorship of community health promotion activities

7-10. Community health promotion programs

7-11. Culturally appropriate community health promotion programs

7-12. Older adult participation in community health promotion activities

8. Environmental Health

8-1. Harmful air pollutants

8-2. Alternative modes of transportation

8-9. Beach closings

8-20. School policies to protect against environmental hazards

9. Family Planning

9-11. Pregnancy prevention education

11. Health Communication

11-1. Households with Internet access

11-4. Quality of Internet health information sources

12. Heart Disease and Stroke

12-1. Coronary heart disease (CHD) deaths

12-7. Stroke deaths

12-9. High blood pressure

12-10. High blood pressure control

12-11. Action to help control blood pressure

12-13. Mean total cholesterol levels

12-14. High blood cholesterol levels

12-16 LDL-cholesterol level in CHD patients

15. Injury and Violence Prevention

15-1. Nonfatal head injuries

15-2. Nonfatal spinal cord injuries

15-13. Deaths from unintentional injuries

15-14. Nonfatal unintentional injuries

15-16. Pedestrian deaths

15-18. Nonfatal pedestrian injuries

15-21. Motorcycle helmet use

15-23. Bicycle helmet use

15-24. Bicycle helmet laws

15-27. Deaths from falls

15-28. Hip fractures

15-28. Drownings

15-31. Injury protection in school sports

16. Maternal, Infant, and Child Health

16-3. Adolescent and young adult deaths

16-12. Weight gain during pregnancy

17. Medical Product Safety

17-2. Linked, automated information systems

17-3 Provider review of medications taken by patients

17-5. Receipt of oral counseling from prescribers and dispensers

18. Mental Health and Mental Disorders

18-4. Treatment for children with mental health needs

18-5. Treatment for adults with mental illnesses

18-14. Eating disorder relapses

19. Nutrition and Overweight

19-1. Healthy weight in adults

19-2. Obesity in adults

19-3. Overweight or obesity in children and adolescents

19-16. Worksite promotion of nutrition education and weight management

20. Occupational Safety and Health

20-1. Work-related injury deaths

20-2. Work-related injuries

20-3. Overextension or repetitive motion

20-10. Worksite stress reduction programs

23. Public Health Infrastructure

23-2. Public access to information and surveillance data

23-5. Data for Leading Health Indicators, Health Status Indicators, and Priority Data Needs at Tribal, State, and local levels

23-16. Prevention research

24. Respiratory Diseases

24-1. Deaths from asthma

24-2. Hospitalizations for asthma

24-3. Hospital emergency department visits for asthma

24-4. Activity limitations

24-5. School or work days lost

24-6. Patient education

24-7. Appropriate asthma care

25. Sexually Transmitted Diseases

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25-12. Responsible sexual behavior messages on television

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27. Tobacco Use

27-1. Adult tobacco use

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27-3. Initiation of tobacco use

27-4. Age at first use of tobacco

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27-7. Smoking cessation by adolescents

28. Vision and Hearing

28-9. Protective eyewear

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Aerobic: Conditions or processes that occur in the presence of, or requiring, oxygen.[43]

Energy expenditure: The energy cost to the body of physical activity, usually measured in kilocalories.[43]

Functional independence: The ability to perform successfully and safely activities related to a daily routine with sufficient energy, strength/endurance, flexibility, and coordination.

Physical activity: Bodily movement that is produced by the contraction of skeletal muscle and that substantially increases energy expenditure.[1]

Moderate physical activity: Activities that use large muscle groups and are at least equivalent to brisk walking. In addition to walking, activities may include swimming, cycling, dancing, gardening and yardwork, and various domestic and occupational activities.

Vigorous physical activity: Rhythmic, repetitive physical activities that use large muscle groups at 70 percent or more of maximum heart rate for age. An exercise heart rate of 70 percent of maximum heart rate for age is about 60 percent of maximal cardiorespiratory capacity and is sufficient for cardiorespiratory conditioning. Maximum heart rate equals roughly 220 beats per minute minus age. Examples of vigorous physical activities include jogging/running, lap swimming, cycling, aerobic dancing, skating, rowing, jumping rope, cross-country skiing, hiking/backpacking, racquet sports, and competitive group sports (for example, soccer and basketball).

Physical fitness: A set of attributes that persons have or achieve that relates to the ability to perform physical activity.[1] Performance-related components of fitness include agility, balance, coordination, power, and speed.[44] Health-related components of physical fitness include body composition, cardiorespiratory function, flexibility, and muscular strength/endurance.[43]

Agility: Ability to start, stop, and move the body quickly and in different directions.

Balance: Ability to maintain a certain posture or to move without falling.

Body composition: The relative amount of body weight that is fat and nonfat.

Cardiorespiratory function: A health-related component of physical fitness that relates to the ability of the circulatory and respiratory systems to supply oxygen during physical activity.

Coordination: Ability to do a task integrating movements of the body and different parts of the body.

Exercise (exercise training): Planned, structured, and repetitive bodily movement done to improve or maintain one or more components of physical fitness.

Flexibility: The ability to move a joint through the full range of motion without discomfort or pain.

Muscular strength: The ability of the muscle to generate the maximum amount of force.

Muscular endurance: The ability of the muscle to perform repetitive contractions over a prolonged period of time.

Power: Ability to exert muscular strength quickly.

Speed: Ability to move the whole body quickly.

Sedentary: A person who is relatively inactive and has a lifestyle characterized by a lot of sitting.[43]

References

1. U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.

2. Frost, H.; Moffett, J.A.K.; Moser, J.S.; and Fairbank, J.C.T. Randomized controlled trial for evaluation of fitness programme for patients with chronic low back pain. *British Medical Journal* 310:151-154, 1995.

3. McTiernan, A.; Stanford, J.L.; Weiss, N.S.; Daling, J.R.; and Voight, L.F. Occurrence of breast cancer in

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relation to recreational exercise in women age 50-64 years. *Epidemiology* 7(6):598-604, 1996.

4. Kujala, U.M., Kaprio, J.; Sarna, S.; and Koskenvuo, M. Relationship of leisure-time physical activity and mortality: The Finnish twin cohort. *Journal of the American Medical Association* 279(6):440-444, 1998.

5. Paffenbarger, R.S.; Hyde, R.T.; Wing, A.L.; Lee, I.M.; et al. The association of changes in physical-activity level and other lifestyle characteristics with mortality among men. *New England Journal of Medicine* 328(8):538-545, 1993.

6. Sherman, S.E.; D'Agostino, R.B.; Cobb, J.L.; and Kannel, W.B. Physical activity and mortality in women in the Framingham Heart Study. *American Heart Journal* 128(5):879-884, 1994.

7. Kaplan, G.A.; Strawbridge, W.J.; Cohen, R.D.; and Hungerford, L.R. Natural history of leisure-time physical activity and its correlates: Associations with mortality from all causes and cardiovascular disease over 28 years. *American Journal of Epidemiology* 144(8):793-797, 1996.

8. Kushi, L.H.; Fee, R.M.; Folsom, A.R.; Mink, P.J.; et al. Physical activity and mortality in postmenopausal women. *Journal of the American Medical Association* 277:1287-1292, 1997.

9. Nelson, M.E.; Fiatarone, M.A.; Morganti, C.M.; Trice, I.; Greenberg, R.A.; and Evans, W.J. Effects of high-intensity strength training on multiple risk factors for osteoporotic fractures: A Randomized Controlled Trial. *Journal of the American Medical Association* 272(24):1909-1914, 1994.

10. LaCroix, A.Z.; Guralnik, J.M.; Berkman, L.F.; Wallace, R.B.; and Satterfield, S. Maintaining mobility in late life. II. Smoking, alcohol consumption, physical activity, and body mass index. *American Journal of Epidemiology* 137(8):858-869, 1993.

11. Buchner, D.M. Preserving mobility in older adults. *Western Journal of Medicine* 167(4):258-264, 1997.

12. Stenstrom, C.H. Home exercise in rheumatoid arthritis functional class II: Goal setting versus pain attention. *Journal of Rheumatology* 21(4):627-634, 1994.

13. Centers for Disease Control and Prevention (CDC). Prevalence of leisure-time physical activity among persons with arthritis and other rheumatic conditions—United States, 1990-91. *Morbidity and Mortality Weekly Report* 46(18):389-393, 1997.

14. National Institutes of Health. Optimal Calcium Intake. *NIH Consensus Statement* 12(4):1-31, June 6-8, 1994.

15. Snow-Harter, C.; Shaw, J.M.; and Matkin, C.C. Physical activity and risk of osteoporosis. In: Marcus, R.; Feldman, D.; and Kelsey, J. (eds.). *Osteoporosis*. San Diego, CA: Academic Press, 1996, 511-528.

16. Pate, R.R.; Pratt, M.; Blair, S.N.; Haskell, W.L.; Macera, C.A.; Bouchard, C.; et al. Physical activity and public health: A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of the American Medical Association* 273(5):402-407, 1995.

17. President's Council on Physical Fitness and Sports. *Physical Activity & Sport in the Lives of Girls*. Washington, DC: The President's Council on Physical Fitness and Sports, May 1997.

18. Stofan, J.R.; DiPietro, L.; Davis, D.; Kohl, H.W.; et al. Physical activity patterns associated with cardiorespiratory fitness and reduced mortality: The Aerobics Center Longitudinal Study. *American Journal of Public Health* 88(12):1807-1813, 1998.

19. Brown, M.; Sinacore, D.R.; and Host, H.H. The relationship of strength to function in the older adult. *Journal of Gerontology* 50A:55-59, 1995.

20. Tseng, B.S.; Marsh, D.R.; Hamilton, M.T.; and Booth, F.W. Strength and aerobic training attenuate muscle wasting and improve resistance to the development of disability with aging. *Journal of Gerontology* 50A:113-119, 1995.

21. Evans, W.J. Effects of exercise on body composition and functional capacity of the elderly. *Journal of Gerontology* 50A:147-150, 1995.

22. Nelson, M.E.; Fiatarone, M.A.; Morganti, C.M.; Trice, I.; Greenberg, R.A.; and Evans, W.J. Effects of high-intensity strength training on multiple risk factors for osteoporotic fractures: A Randomized Controlled Trial. *Journal of the American Medical Association* 272(24):1909-1914, 1994.

23. Cunningham, D.A.; Paterson, D.H.; Hinmann, J.E.; and Rechnitzer, P.A. Determinants of independence in the elderly. *Canadian Journal of Applied Physiology* 18(3):243-254, 1993.

24. Lan, C.; Lai, J.S.; Chen, S.Y; and Wong, M.K. 12-month Tai Chi training in the elderly: Its effect on health fitness. *Medicine and Science in Sports and Exercise* 30(3):345-351, 1997.

25. Pate, R.R.; Baranowski, T.; Dowda, M.; and Trost, S.G. Tracking of physical activity in young children. *Medicine and Science in Sports and Exercise* 28(1):92-96, 1996.

26. Pate, R.R.; Long, B.J.; and Heath, G. Descriptive epidemiology of physical activity in adolescents. *Pediatric Exercise Science* 6:434-447, 1994.

27. CDC. Youth risk behavior surveillance—United States, 1997. *Morbidity and Mortality Weekly Report* 47(55-3):1-89, 1998.

28. Anderson, R.E.; Crespo, C.J.; Bartlett, S.J.; Cheskin, L.J.; and Pratt M. Relationship of physical activity and television watching with body weight and level of fatness among children: Results from the Third National Health and Nutrition Examination Survey. *Journal of the American Medical Association* 279:938-942, 1998.

29. McKenzie, T.L.; Nader, P.R.; Strikmiller, P.K.; Yang, M.; Stone, E.J.; Perry, C.L.; Taylor, W.C.; Epping, J.M.; Feldman, H.A.; Luepker, R.V.; and Kelder, S.H. School physical education: Effect of the child and adolescent trial for cardiovascular health. *Preventive Medicine* 25(4):423-431, 1996.

30. Sallis, J.F.; McKenzie, T.L.; Alcaraz, J.E.; Kolody, B.; Faucette, N.; and Hovell, M.F. The effects of a 2-year physical education program (SPARK) on physical activity and fitness in elementary school students. *American Journal of Public Health* 87(8):1328-1334, 1997.

31. Sallis, J.F., and Patrick, K. Physical activity guidelines for adolescents: Consensus statement. *Pediatric Exercise Science* 6:302-314, 1994.

32. CDC. Guidelines for school and community programs to promote lifelong physical activity among young people. *Morbidity and Mortality Weekly Report* 46(RR-6):1-36, 1997.

33. Killen, J.D.; Telch, M.J.; Robinson, T.N.; et al. Cardiovascular disease risk reduction for tenth graders: A multiple-factor school-based approach. *Journal of the American Medical Association* 260(12):1728-1733, 1988.

34. Prokhorov, A.V.; Perry, C.L.; Kelder, S.H.; et al. Lifestyle values of adolescents: Results from Minnesota Heart Health Youth Program. *Adolescence* 28(111):637-647, 1993.

35. Kelder, S.H.; Perry, C.L.; and Klepp, K.I. Community-wide youth exercise promotion: Long-term outcomes of the Minnesota Heart Health Program and the Class of 1989 study. *Journal of School Health* 63(5):218-223, 1993.

36. Arbeit, M.L.; Johnson, C.C.; and Mott, D.S. The Heart Smart Cardiovascular School Health Promotion: Behavior correlates of risk factor change. *Preventive Medicine* 21(1):18-32, 1992.

37. Sallis, J.F.; Hovell, M.F.; Hofstetter, C.R.; et al. Distance between homes and exercise facilities related to frequency of exercise among San Diego residents. *Public Health Reports* 105(2):179-185, 1990.

38. Carnegie Council on Adolescent Development. *A Matter of Time: Risk and Opportunity in the Out-of-School Hours. Recommendations for Strengthening Community Programs for Youth.* New York, NY: Carnegie Corporation of New York, 1994.

39. Cole, G.; Leonard, B.; Hammond, S.; and Fridinger, F. Using "stages of behavioral change" constructs to measure the short-term effects of a worksite-based intervention to increase moderate physical activity. *Psychological Reports* 82(2):615-618, 1998.

40. Shephard, R.J. Employee health and fitness—state of the art. *Preventive Medicine* 12(5):644-653, 1983.

41. *Summary of Travel Trends: 1995. Nationwide Personal Transportation Survey.* (http://www.cta.ornl.gov/npts/1995/)

42. *National Bicycling and Walking Study: Transportation choices for a changing America.* Publication FH10A PD 94-023. Washington, DC: U.S. Department of Transportation. Federal Highway Administration, 1994.

43. Kent, M. *The Oxford Dictionary of Sport's Science and Medicine.* Oxford, England: Oxford University Press, 1994.

44. Howley, E.T., and Franks, B.O. *Health Fitness Instructors Handbook.* 3rd ed. IL: Human Kinetics, 1997.

23

Public Health Infrastructure

Co-Lead Agencies: Centers for Disease Control and Prevention;
Health Resources and Services Administration

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Goal

Ensure that Federal, Tribal, State, and local health agencies have the infrastructure to provide essential public health services effectively.

Overview

The mission of public health is to fulfill "society's interest in assuring conditions in which persons can be healthy."[1] Public health engages both private and public organizations and individuals in accomplishing this mission. Responsibilities encompass preventing epidemics and the spread of disease, protecting against environmental hazards, preventing injuries, encouraging healthy behavior, helping communities to recover from disasters, and ensuring the quality and accessibility of health services.

Issues and Trends

The Nation's public health infrastructure has three components: the people who work in the field of public health, the information and communication systems used in collecting and disseminating accurate data, and the public health organizations at the State and local levels that are in the front lines of public health. The public health infrastructure is a complex web of practices and organizations that has been characterized as in "disarray."[1, 2]

Public health encompasses three core functions: *assessment* of information on the health of the community, comprehensive public health *policy development*, and *assurance* that public health services are provided to the community.[1] These functions have been defined further and expanded into 10 essential public health services.[2] (See chart for full list from the *Public Health in America* statement.[3]) The totality of the public health infrastructure includes all governmental and nongovernmental entities that provide any of these services. Environmental health, occupational health and safety, mental health, and substance abuse are integral parts of public health. Service providers, such as managed care organizations, hospitals, nonprofit corporations, schools, faith organizations, and businesses, also are an integral part of the public health infrastructure in many communities.

Various reports and evaluations have described the continuing deterioration of the national public health system: health departments are closing, technology and information systems are outmoded, emerging and drug-resistant diseases threaten to overwhelm resources, and serious training inadequacies weaken the capacity of the public health workforce to address new threats and adapt to changes in the health care market.[1, 4] Conversely, interest in public health has led to the development of public health improvement plans in several States, including Illinois and

Washington. In addition, private foundations have funded major national programs to improve health. For example, Turning Point: Collaborating for a New Century of Public Health Initiatives, supported by the Robert Wood Johnson Foundation and the W.K. Kellogg Foundation, helps develop more effective public health infrastructure by providing technical assistance to health departments at State and local levels.

All public health services depend on the presence of basic infrastructure. Every categorical public health program—childhood immunizations, infectious disease monitoring, cancer and asthma prevention, drinking water quality, injury prevention and many others—requires health professionals who are competent in cross-cutting and technical skills, public health agencies with the capacity to assess and respond to community health needs, and up-to-date information systems. Federal public health agencies rely on the presence of infrastructure systems at the local and State levels to support the implementation of their programs.

In public health, a strong infrastructure provides the capacity to prepare for and respond to both acute and chronic threats to the Nation's health, whether they are bioterrorism attacks, emerging infections, disparities in heath status, or increases in chronic and injury rates. Such an infrastructure serves as the foundation for planning, delivering, and evaluating public health. The public health infrastructure comprises data and information systems, the workforce, and public health organizations. Research also is a key activity of public health infrastructure in identifying opportunities to improve health, strengthen information systems and organizations, and make more effective and efficient use of resources.

Health data and surveillance systems provide information on illness, disability, and death from acute and chronic conditions; injuries; personal, environmental, and occupational risk factors; preventive and treatment services; and costs. To be most useful, public health data must be accessible, accurate, timely, and clearly stated and must adhere to strict confidentiality standards. The system must be linked with other data systems and must be linked with and integrated at the Federal, Tribal, State, and local levels. The systematic collection, analysis, interpretation, dissemination, and use of health data drive efforts to determine the health status of a population, plan prevention programs, and evaluate program effectiveness. Healthy People activities during the 1980s and 1990s have demonstrated the central role of data, focused attention on what is important to measure, and stimulated the development of new data systems.

Although Federal agencies take the lead in collecting national public health data, they are only some of the many necessary partners that collect, analyze, and use public health data. Surveillance often involves active cooperation among Federal, Tribal, State, and local agencies. For example, the Vital Statistics Cooperative Program obtains information on births, deaths, marriages, and divorces from all 50 States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. Programs in each area collect vital information from many sources in local communities, including funeral directors, medical examiners, coroners, hospitals, religious authorities, and justices of the peace. Other data collection systems, based on sample surveys rather than reports, depend on the participation of thousands of private citizens nationwide. And still other systems rely on the administrative records of public and private health care organizations.

If data are not available or are missing, problems can arise, especially for State and local health agencies. In particular, health problems may not be identified in high-risk populations, or the public intervention may not be timely enough. Information enables public health to direct preventive services and health promotion activities toward select populations.

The public health workforce must have up-to-date knowledge, skills, and abilities to deliver services effectively and carry out the core functions of assessment, policy development, and assurance of services. The importance of organizations in making a system effective often is overlooked. Yet, Tribal, State and local public health agencies, in partnership with other community organizations, are essential to an effective public health system.

Because a national data system will not be available in the first half of the decade for tracking progress, one subject of interest concerning the public health infrastructure in not covered in this focus area's objectives. This topic represents a research and data collection agenda for the coming decade: increasing the proportion of Federal, Tribal, State, and local public and private employers that voluntarily adopt the Standard Occupational Classification (SOC) system to categorize public health personnel.

Disparities

A major goal of Healthy People 2010 is to "eliminate health disparities." These disparities exist at all State and local levels but are not well delineated because of differences in public health systems. Improved data and information systems, a better trained public health workforce, and more effective public health organizations will strengthen the public health infrastructure at all levels and help identify where disparities exist. Then targeted interventions and programs to eliminate the disparities can be developed.

Disparities among public health organizations and between the public and private health sectors are also of concern. For example, a diverse, highly skilled workforce must be recruited and trained to meet the challenges of the 21st century. Salary structures and disparities in staffing across jurisdictions, as well as between workers in the public and private sectors, will affect the ability of public health agencies to recruit and retain a high-quality workforce.

Opportunities

Several developments suggest opportunities to improve public health capacity nationwide.

The 1997 report *Public Health Workforce: An Agenda for the 21st Century* recognized the need for a system to assure a stronger public health workforce.[5] The report identified five areas to be strengthened: national leadership, State and local leadership, workforce composition, curriculum development, and distance learning. Data systems are needed to track the extent to which the workforce has the knowledge, skills, and abilities to carry out its functions. With wide input from the public health community, the Standard Occupational Classification system was updated in 1997 and 1998 to include an array of public health professions.[6] SOC will continue to be used in a number of national population- and employer-based surveys by the Bureau of Labor Statistics (U.S. Department of Labor), the Bureau of the Census (U.S. Department of Commerce), and the Bureau of Health Professions (U.S. Department of Health and Human Services). A standard classification may be useful in determining minimum levels of competency for each classification.

Essential Public Health Services

1. Monitor health status to identify community health problems.
2. Diagnose and investigate health problems and health hazards in the community.
3. Inform, educate, and empower people about health issues.
4. Mobilize community partnerships to identify and solve health problems.
5. Develop policies and plans that support individual and community health efforts.
6. Enforce laws and regulations that protect health and assure safety.
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable.
8. Assure a competent public health and personal health care workforce.
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
10. Research for new insights and innovative solutions to health problems.

Source: Public Health Function Steering Committee. *Public Health in America*, Fall 1994. www.health.gov/phfunctions/public.htm (January 1, 2000).

Interim Progress Toward Year 2000 Objectives

Healthy People 2000 did not have a specific focus area for public health infrastructure. Two objectives, however, did address broad infrastructure areas. One stated, "Increase to at least 90 percent the proportion of persons who are served by a local health department that is effectively carrying out the core functions of public health." Although selected studies have provided a snapshot of local health department effectiveness in carrying out the core functions,[7, 8] systematic monitoring of this objective over time has not been done. However, efforts to define, achieve, and measure this objective have contributed to a more complete description of infrastructure as well as a more detailed and expanded infrastructure goal.

The second objective stated, "Increase to at least 50 percent the proportion of counties that have established culturally and linguistically appropriate community health promotion programs for racial and ethnic minority populations."

In 1996-97, baseline data for this objective were obtained for local health departments serving certain racial and ethnic groups comprising 10 percent or more of the population. Programs or interventions were most likely to be adapted in the areas of maternal and infant health (47 percent), nutrition (44 percent), and family planning (42 percent). Adaptations were least likely to have been made by such groups in the areas of occupational safety and health (13 percent), mental health and mental disorders (18 percent), and food and drug safety and health (18 percent).

Healthy People 2000 had a specific focus area on data and surveillance. Several objectives from this chapter have been modified and are included in the data and information systems section below.

Of the seven surveillance and data system objectives, progress has been made on six. A set of health status indicators appropriate to Federal, State, and local levels was developed, and all States monitor at least some indicators. National data sources to measure progress toward each of the Healthy People 2000 objectives were identified or created for 97 percent of objectives. Although difficult to quantify, progress toward filling data gaps is continuing, most recently through the *Healthy People 2000 Midcourse Review and 1995 Revisions* when considerable attention was given to population groups at highest risk for premature death, disease, or disability. The number of States that periodically publish data on Healthy People 2000 objectives has increased substantially. Systems for the transfer of data have expanded considerably in all States, with the expansion of the Internet playing a major role. Achieving the timely release of data appears to have moved away from the target; however, the measurement of progress for this objective is affected by the frequency of data collection.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review*, 1998-99.

Public Health Infrastructure

Goal: Ensure that Federal, Tribal, State, and local health agencies have the infrastructure to provide essential public health services effectively.

Number	Objective
Data and Information Systems	
23-1	Public health employee access to Internet
23-2	Public access to information and surveillance data
23-3	Use of geocoding in health data systems
23-4	Data for all population groups
23-5	Data for Leading Health Indicators, Health Status Indicators, and Priority Data Needs at Tribal, State, and local levels
23-6	National tracking of Healthy People 2010 objectives
23-7	Timely release of data on objectives
Workforce	
23-8	Competencies for public health workers
23-9	Training in essential public health services
23-10	Continuing education and training by public health agencies
Public Health Organizations	
23-11	Performance standards for essential public health services
23-12	Health improvement plans
23-13	Access to public health laboratory services
23-14	Access to epidemiology services
23-15	Model statutes related to essential public health services
Resources	
23-16	Data on public health expenditures
Prevention Research	
23-17	Prevention research

Data and Information Systems

23-1. (Developmental) Increase the proportion of Tribal, State, and local public health agencies that provide Internet and e-mail access for at least 75 percent of their employees and that teach employees to use the Internet and other electronic information systems to apply data and information to public health practice.

Potential data sources: National Association of County and City Health Officials (NACCHO); Association of State and Territorial Health Officials (ASTHO); National Public Health Performance Standards Program (PHPPO), CDC; IHS.

Unpublished data from a 1999 survey of the National Association of County and City Health Officials showed 49 percent of local health department directors had continuous, high-speed access to the Internet at work. Further, 83 percent of local health departments had staff members who can search for and access public information on the Internet. The Bioterrorism Initiative, which began in 1999, is expected to generate information on Internet and e-mail capacity at State and local levels for responding to terrorist events; this information could be used in monitoring this objective.

All workers within a State or local public health agency need access to the Internet or other electronic information systems appropriate to their job functions. Access requires hardware (for example, computers, modems, CD-ROM drives), software that can browse the Internet and can be used to analyze health information databases, and training on the effective use of the Internet and database systems. Adequate capacity in public health informatics—the systematic application of information and computer science and technology to public health practice, research, and learning—is key to this objective. Public health agencies need to provide appropriate training on data sources and how to transform the data retrieved from these systems into information that can be used to develop public health policy.

23-2. (Developmental) Increase the proportion of Federal, Tribal, State, and local health agencies that have made information available to the public in the past year on the Leading Health Indicators, Health Status Indicators, and Priority Data Needs.

Potential data sources: CDC, NCHS; National Association of County and City Health Officials (NACCHO); Association of State and Territorial Health Officials (ASTHO); National Public Health Performance Standards Program (PHPPO), CDC; IHS.

Leading Health Indicators are defined elsewhere in *Healthy People 2010*. Health Status Indicators and Priority Data Needs are those generated from objective 22.1 in Healthy People 2000.[9, 10] This objective seeks to ensure that data collected at the National, State, and local levels are electronically aggregated and available to and accessible by individuals and organizations. The objective includes publicly accessible communication through media (for example, print, television, and radio) or online systems, such as the Internet. In addition to data on Leading Health Indicators, Health Status Indicators, and Priority Data Needs, many other kinds of public health data need to be accessible to the public. These data include health outcomes; utilization statistics, such as the Health Plan Employer Data and Information Set (HEDIS) or similar measures from managed care organizations; infrastructure data; health risk data; and community report cards that provide a snapshot of a community's health. Efforts should be made to include other sources of data not widely used for public health assessment (for example, sources of socioeconomic, expenditures, and quality of life data).

23-3. Increase the proportion of all major National, State, and local health data systems that use geocoding to promote nationwide use of geographic information systems (GIS) at all levels.

Target: 90 percent.

Baseline: 45 percent of major National, State, and local health data systems geocoded records to street address or latitude and longitude in 1999.

Target setting method: 100 percent improvement.

Data source: CDC, NCHS.

Public health rests on information. The information technology revolution, including online systems, the Internet, and other electronic information systems, continues to expand both the volume and the accessibility of information. Increased use of geocoding in health data systems will provide the basis for more cost-effective disease surveillance and intervention. At the same time, challenges arise in synthesizing and disseminating the huge amount of available information, as well as ensuring that the data are scientifically accurate and have appropriate safeguards for confidentiality.

The capacity to achieve national goals is related to the ability to target strategies to geographic areas.[11] Extension of geocoding capacities throughout health data systems will facilitate this ability. A geographic information system is a powerful tool combining geography, data, and computer mapping. With GIS, digital maps and databases are stored with linked georeferenced identifiers to facilitate rapid computer manipulation, analysis, and spatial display of information. Geocoding (street address matching or assignment of latitude and longitude) will be the basis for data linkage and analysis in the 21st century. The versatility of GIS supports the exploration of spatial relationships, patterns, and trends that otherwise would go unnoticed.[12] In 1999, 10 of 22 major health data systems, defined as data systems responsible for tracking 5 or more Healthy People 2010 objectives, geocoded data. However, public access to data below the county level is prohibited or severely restricted because of confidentiality and privacy issues. A major challenge in the coming decade will be to increase public access to GIS information without compromising confidentiality.[13] (See Volume III, Part C, for a discussion of these major health data systems.)

23-4. Increase the proportion of population-based Healthy People 2010 objectives for which national data are available for all population groups identified for the objective.

Target: 100 percent.

Baseline: 10 percent of the population-based objectives had national data for all select population groups in 1999.

Target setting method: Total coverage.

Data source: CDC, NCHS.

The capacity of the public health system to measure the health of all individuals requires special attention to groups that may not be identifiable in statewide or national databases. Lack of data for these groups can be the result of relatively small numbers of cases for rare events, small population groups, or other special circumstances. Better data-gathering systems are needed to track health objectives for such populations as racial and ethnic groups, persons with disabilities, specific Tribes, homeless persons, institutionalized persons (for example, in nursing homes and prisons), low-income persons, and students in special education.

National data indicate that some racial and ethnic groups often face higher rates of illness, disability, death, or other risk factors than the general population. Other groups, such as persons with low incomes, limited education, or disabilities, also have relatively poor health. Females and males also experience the burden of poor health in different ways. One of the overarching goals of Healthy People 2010 is to eliminate these health disparities. To assess progress toward this goal, data on population groups must be available.

23-5. (Developmental) Increase the proportion of Leading Health Indicators, Health Status Indicators, and Priority Data Needs for which data—especially for select populations—are available at the Tribal, State, and local levels.

Potential data sources: CDC, NCHS; IHS.

In 1997, 37 of 47 States and the District of Columbia had their own Healthy People 2000 plans.[14] The average number of objectives in the State plans was 113 but ranged from 20 to 308.[14] On average, baseline data were available for 76 percent of the States' objectives by 1997, although more than half of the data were 3 or more years old.[14]

Because of the lack of comparability between States, a set of Leading Health Indicators has been developed from the Healthy People 2010 objectives. These indicators can be monitored at the National, State, and local levels. They can be used in conjunction with States' objectives to evaluate the progress of Healthy People 2010 in communities.

Health Status Indicators and Priority Data Needs are those generated from objective 22.1 in Healthy People 2000.[9, 10] Select populations are those identified for each indicator that make up at least 10 percent of the population for the Tribal, State, or local area. State and local data are essential for the managers and providers who must assess health status and services and plan, carry out, and evaluate health programs. However, data were not available for all objectives at all State and local levels to evaluate the majority of Healthy People 2000 objectives. Therefore, a consensus process identified a small set of indicators that would be understandable, acceptable, outcome oriented, and measurable with available data and would imply specific interventions that compel action.[9] This process resulted in the set of Health Status Indicators. National data for these indicators are published regularly in the *Healthy People 2000 Review*.[15]

An additional set of measures was considered that had important public health significance but could not be included because of insufficient data at the State and local levels. This set, known as Priority Data Needs, has been used to measure these additional indicators.[10] (State data are available for both the Health Status Indicators and Priority Data Needs at www.cdc.gov/nchswww/datawh/datawh.htm.)

An important function of these different sets of health indicators is to monitor progress toward the second goal of Healthy People 2010: to eliminate health disparities among population groups. Data for these indicators need to be available at the National, Tribal, State, and local levels. The objective's intent is to ensure the availability of sufficient and accurate data to evaluate these indicator sets at all geographic levels and for all select population groups.

23-6. Increase the proportion of Healthy People 2010 objectives that are tracked regularly at the national level.

Target: 100 percent.

Baseline: 59 percent of objectives are tracked every 3 years (preliminary data).

Target setting method: Total coverage for population-based objectives.

Data source: CDC, NCHS.

Frequent, regular feedback is needed to tailor strategies to achieve national objectives during a decade. Past efforts have been hampered by infrequent tracking of objectives. For adequate tracking of the objectives during the next decade, at least three data points (baseline, midpoint, final) are desirable to assess progress. Hence, objectives need to be measured at least every 3 years. Currently, 48 percent (preliminary data) of the objectives are tracked annually.

Healthy People 2010 contains more than 150 "developmental" objectives that lack baseline data at initial publication. Healthy People will succeed and lead to action only to the extent that regularly collected data can be used to track its objectives.

23-7. Increase the proportion of Healthy People 2010 objectives for which national data are released within 1 year of the end of data collection.

Target: 100 percent.

Baseline: 27 percent of the objectives measured by major data sources were tracked with data released within 1 year of the end of data collection in 1999 (preliminary data).

Target setting method: Total coverage (as measured by major data systems).

Data source: CDC, NCHS.

The utility of data depends on both the periodicity of data collection (see objective 23-6) and the timeliness of data release. In past years, a number of electronic data collection systems have been put in place in National, Tribal, State, and local data collection agencies (for example, electronic birth and death certificates, computer-assisted personal interview questionnaires, and computer-assisted telephone interview questionnaires). Some of these innovations, such as vital statistics data from electronic birth and death certificates, already are showing results in the more timely release of data. For others, the benefits of faster turnaround are still a few years away. The purpose of this objective is to ensure that health information is available to policymakers and the public shortly after data collection.

Workforce

23-8. (Developmental) Increase the proportion of Federal, Tribal, State, and local agencies that incorporate specific competencies in the essential public health services into personnel systems.

Potential data sources: National Association of County and City Health Officials (NACCHO); Association of State and Territorial Health Officials (ASTHO); HRSA; IHS.

In addition to a basic knowledge of public health, all public health workers should have specific competencies in their areas of specialty, interest, and responsibility. Competent leaders, policy developers, planners, epidemiologists, funders, evaluators, laboratory staff, and others are necessary for a strong public health infrastructure. The workforce needs to know how to use information technology effectively for networking, communication, and access to information. A skilled workforce must be culturally and linguistically competent to understand the needs of and deliver services to select populations and to have sensitivity to diverse populations. Finally, technical competency in such areas as biostatistics, environmental and occupational health, the social and behavioral aspects of health and disease, and the practice of prevention in clinical medicine should be developed in the workforce.

Although the disciplines in a particular agency will vary according to the resources, policies, needs, and populations served, individual public health employees must have certain competencies or levels of expertise. Their combined areas of expertise enable the organization to provide essential public health services. Failure to include references to these competencies in the formal personnel system makes achieving standards difficult. Position descriptions or performance evaluations are likely sources of data for this objective.

National licensing and certification programs that measure competency already exist for nurses, physicians, dietitians, health educators, laboratory technicians, sanitarians, environmental health specialists, and many allied health professionals. Coordination with these national programs will be important to ensure that new certification efforts cover essential public health service concerns. At least one State, New Jersey, has licensing requirements for all local health officers.

23-9. (Developmental) Increase the proportion of schools for public health workers that integrate into their curricula specific content to develop competency in the essential public health services.

Potential data sources: Association of Schools of Public Health; American Association of Medical Colleges; Schools of Nursing; American Association of Colleges of Nursing.

23-10. (Developmental) Increase the proportion of Federal, Tribal, State, and local public health agencies that provide continuing education to develop competency in essential public health services for their employees.

Potential data sources: National Association of County and City Health Officials (NACCHO); Association of State and Territorial Health Officials (ASTHO); HHS.

The above two objectives address training for both the current and future public health workforce. Tomorrow's public health workforce is being educated today by schools of public health, programs in public health accredited by the Council on Education for Public Health, and other graduate programs. These emerging leaders must be grounded in the areas of expertise needed to deliver essential public health services. This objective may be accomplished either by developing specific courses or by incorporating essential public health services into existing offerings, depending on the school or program.

There is an ongoing need to train and educate those currently employed in public health as new areas, problems, threats, and potential disasters emerge. For example, the threat of bioterrorism or the increased impact of any natural and technological disaster will require different training and areas of expertise so that public health workers can detect problems early, communicate rapidly, and respond effectively. A system for enabling career-long learning opportunities is desirable.

Although several disciplines have continuing education requirements as part of the licensing or certification process, this objective extends to all workers. Federal, Tribal, State, and local public health agencies do not necessarily have to provide the education, but they need to ensure its availability to employees. Employees in organizations that are not formally part of the public health system but that deliver health services also should have continuing education. Once an effective source of data is developed for this objective, a percentage of employees should be targeted annually for continuing education.

Public Health Organizations

23-11. (Developmental) Increase the proportion of State and local public health agencies that meet national performance standards for essential public health services.

Potential data source: National Public Health Performance Standards Program (PHPPO), CDC.

Experts in quality improvement have long asserted that "what gets measured gets done."[16] The measurement of performance is not new, nor is the concept foreign to most health departments. What is not being done, however, is comprehensive, systematic performance evaluation. Without standard performance indicators and systematic comparisons, public health lacks useful benchmarks for improvement. National performance standards could be used to improve quality, increase accountability for dollars invested, and create credibility with internal and external constituents. National organizations, such as the Joint Commission on Accreditation of Healthcare Organizations and the National Commission on Quality Assurance, that work with performance measures in health care have models that can be followed.

A number of States have or are developing State-specific performance standards for local public health agencies. CDC, in conjunction with National, State, and local public health organizations, is developing national performance standards for State and local health departments.[17] These national standards, expected to be operational in 2000, are based on the essential public health services.

23-12. Increase the proportion of Tribes, States, and the District of Columbia that have a health improvement plan and increase the proportion of local jurisdictions that have a health improvement plan linked with their State plan.

Objective	Jurisdiction	1997 Baseline (unless noted)	2010 Target
		Percent	
23-12a.	Tribes	**Developmental**	
23-12b.	States and the District of Columbia	79	100
23-12c.	Local jurisdictions	32 (1992-93)	80

Target setting method: Total coverage for Tribes, States, and the District of Columbia; 150 percent improvement for local jurisdictions.

Data sources: National Profile of Local Health Departments, National Association of County and City Health Officials (NACCHO); Association of State and Territorial Health Officials (ASTHO); IHS.

Planning is central to improving public health in any State or community. A health improvement plan (HIP) is a long-term, systematic effort to address health problems on the basis of the results of a community needs assessment. This plan is used by health and other governmental education and human service agencies, in collaboration with community partners, to set priorities and coordinate and target resources.

A HIP is critical for developing policies and defining actions to target efforts that promote health. It should define the vision for the health of the community inclusively and should be done in a timely way. Many States and localities have their own HIPs that may not be related to one another. Public health needs often exceed resources, and sufficient resources are never available. The health of a State or local community can be improved by setting priorities so available resources are used more efficiently.

Health improvement plans are, or should be, the link between Healthy People 2010 and the unique health needs of each State and local area. Plans should include all community interests and should tie health goals to other State goal-setting or bench-marking processes. Plans also will identify collaboration among partners to facilitate implementation and evaluation. State and local health departments have a leadership role in this process.

23-13. (Developmental) Increase the proportion of Tribal, State, and local health agencies that provide or assure comprehensive laboratory services to support essential public health services.

Potential data sources: CDC; Association of Public Health Laboratories; Association of State and Territorial Health Officials (ASTHO); National Association of County and City Health Officials (NACCHO).

Public health laboratories, in conjunction with clinical, environmental, and agricultural laboratories, constitute a national laboratory network that fulfills a critical role in assessing and assuring the health of populations and the environment. This role includes such activities and services as laboratory quality assessment and improvement, outbreak investigation, emergency preparedness and response, laboratory-based surveillance, population screening, and technology transfer. The national laboratory network also operates for the benefit of public health by helping to assure safe water, food, and air and by supporting programs such as newborn screening and lead-poisoning prevention.

23-14. (Developmental) Increase the proportion of Tribal, State, and local public health agencies that provide or assure comprehensive epidemiology services to support essential public health services.

Potential data sources: Council of State and Territorial Epidemiologists; IHS.

All communities need access to comprehensive epidemiology services so they can quickly detect, investigate, and respond to diseases in order to prevent unnecessary transmission. Epidemiologists carry out several essential public health services, including monitoring health status, diagnosing and investigating health problems and health hazards, and conducting evaluation and research.

23-15. (Developmental) Increase the proportion of Federal, Tribal, State, and local jurisdictions that review and evaluate the extent to which their statutes, ordinances, and bylaws assure the delivery of essential public health services.

Potential data sources: National Conference of State Legislators; Association of State and Territorial Health Officials (ASTHO); National Association of County and City Health Officials (NACCHO); IHS.

The legal basis for any public health agency is the statutes, ordinances, and charters that create the agency and set forth its powers and duties. General language in such a document usually states the agency's responsibility to preserve, promote, and protect the health of the persons in its jurisdiction. In addition, the agency usually is authorized to enforce multiple statutes that require it to control diseases (or classes of diseases), limit certain kinds of businesses (for example, restaurants and health facilities), and monitor the treatment of waste materials (for example, sewage and garbage). These authorities may be centralized in one agency or distributed across several. A review of State public health statutes shows significant variation from the accepted framework of the essential public health services.[18] As might be expected due to their antiquity, little correlation exists between current statutes and the essential public health services identified in the mid-1990s.

Many laws, rules, regulations, and ordinances pertaining to public health are outmoded. Federal, Tribal, State, and local jurisdictions need to review their public health laws and consider a different conceptual approach for regulating public health. Rather than have a legal structure based on the provision of services for categorical health problems, communities might be better served and protected by a set of laws, statutes, and ordinances based on essential public health services. Without diminishing the role of each jurisdiction in tailoring a statute (ordinance, charter, or regulation) to local conditions and priorities, the Nation's public health infrastructure would be strengthened if jurisdictions had a model law and could use it regularly for improvements. Such a model should be developed and should contain examples of complete statutory language for key principles and provisions (such as establishment of agency powers, authority of agency director, surveillance for conditions of public health importance, due process in enforcement actions to protect the public's health) and examples for drafting any other portion of the law.

Resources

23-16. (Developmental) Increase the proportion of Federal, Tribal, State, and local public health agencies that gather accurate data on public health expenditures, categorized by essential public health service.

Potential data sources: National Association of County and City Health Officials (NACCHO); Association of State and Territorial Health Officials (ASTHO); HHS, Operating Divisions; IHS.

Financial resources fuel the public health infrastructure. Understanding the Nation's investment in public health and the origin and destination of these financial resources is critical. To allocate resources appropriately and to ensure efficient performance, expenditures must be documented and explained. Documenting finances will allow communities to identify gaps in expenditures that they can help fill in partnership with public health agencies. State and local leaders need to know where gaps exist and how funding is changing in order to ensure that public health agencies can protect the Nation's health.

The Public Health Expenditures Project estimated and aggregated expenditures by Federal agencies and State health departments on the essential public health services.[18] The purpose was to understand the capacity to collect such data, apart from specific programmatic expenditures. Considerable difficulty was encountered during the project because expenditure information is not usually collected using this framework. Reporting requirements are different for different program areas and for different funding streams.

The Public Health Foundation (PHF) led a study of eight States that estimated expenditures by essential public health service.[19] A joint study by the National Association of County and City Health Officials, National Association of Local Boards of Health, and PHF reported the feasibility of collecting expenditure data by essential public health service at the local level.[20] These studies showed that reliable estimates of expenditures based on essential public health services can be produced, but that measuring investment in essential services must be integrated into existing data collection strategies and emerging initiatives.

A national perspective on the expenditure of financial resources related to essential public health services will help in allocating resources on a functional rather than a programmatic basis and in identifying where additional resources may be needed to assure a strong infrastructure at the Federal, Tribal, State, and local levels.

Prevention Research

23-17. (Developmental) Increase the proportion of Federal, Tribal, State, and local public health agencies that conduct or collaborate on population-based prevention research.

Potential data sources: Association of Schools of Public Health; National Association of County and City Health Officials (NACCHO); Association of State and Territorial Health Officials (ASTHO); CDC Sentinel Network.

Research is the Nation's investment in the future. Public health research is both funded and conducted by Federal, State, and local public health agencies, academic institutions, private industry, and philanthropic institutions. Opportunities and incentives should be provided to attract new researchers and to encourage collaboration among Federal agencies, States, local communities, and academic institutions. These efforts should result in a research agenda for the Nation's public health infrastructure. The Federal Government has a strong commitment to health research, as evidenced by the billions of dollars allocated to the National Institutes of Health, the Centers for Disease Control and Prevention, the Agency for Healthcare Research and Quality, the Health Resources and Services Administration, and other U.S. Public Health Service agencies. State governments, private foundations, and private industry also are strong supporters of research. Most resources have been directed toward biomedical research, with more focus on individual diseases or risk factors than on population-based prevention.

Researchers and research organizations now recognize the value of including diverse populations and communities in their studies. Population-based prevention and clinical research must continue to include specific population groups, such as females, racial and ethnic groups, and persons who are either not served or are underserved. Research should be responsive to National, State, and local public health priorities and needs.

Strengthening the capacity to conduct population-based research is essential for improving the practice of public health. Research is defined by the *Code of Federal Regulations* as "a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge."[21] The primary goal of population-based public health research is to collect information that will form the basis for public health action.[22] Thus, the areas included in population-based public health research are public health surveillance, program evaluation, emergency response, and evidence-based guideline development and dissemination.

National, State, and local agencies and organizations conducting research require the collaboration and cooperation of the population being studied. Formal collaboration (such as a memorandum of agreement) between schools of public health and State or local health departments for the conduct of a specific project could be a measure for this objective.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-7. Core competencies in health provider training

1.8. Racial and ethnic representation in health professions

6. Disability and Secondary Conditions

6-1. Standard definition of people with disabilities in data sets

6.13. Surveillance and health promotion programs

7. Educational and Community-Based Programs

7-10. Community health promotion programs

7-11. Culturally appropriate community health promotion programs

8. Environmental Health

8-26. Information systems used for environmental health

11. Health Communication

11-1. Households with Internet access

11-3. Research and evaluation of health communication programs

11-4. Quality of Internet health information sources

11-5. Centers of excellence

17. Medical Product Safety

17-2. Linked, automated information systems

21. Oral Health

21-16. State-based surveillance system

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Distance learning: A system and a process that connects learners with distributed learning resources characterized by: (1) separation of place or time between instructor and learner, among learners, or between learners and learning resource and (2) interaction between the learner and the instructor, among learners, or between learners and learning resources conducted through one or more media. Use of electronic media is not required.

Epidemiology: Branch of medical science dealing with the distribution and determinants of health-related events in specified populations and the application of this study to the control of health problems.

Essential public health services: The services identified in *Public Health in America* (defined below).

monitoring health status; diagnosing and investigating health problems; informing, educating, and empowering people; mobilizing community partnerships; developing policies and plans; enforcing laws and regulations; linking people to needed services; assuring a competent workforce; conducting evaluations; and conducting research.

Federal, State, or local public health agency: A government or nongovernment entity authorized to provide one or more essential public health services. Included are health, mental health, substance abuse, environmental health, occupational health, educational, and public health agencies.

Geocoding: The process of address matching and assignment of a street address to a corresponding latitude and longitude.

Geographic information system (GIS): Combines modern computer and supercomputing digital technology with data management systems to provide tools for the capture, storage, manipulation, analysis, and visualization of spatial data. Spatial data contain information, usually in the form of a geographic coordinate system, that gives the data location relative to the earth's surface. These spatial attributes enable previously disparate data sets to be integrated into a digital mapping environment.

Graduate program in public health: Any academic post bachelor's degree program that specifically trains public health workers. Included, for example, are programs in schools of public health, nursing, environmental health, medicine and dentistry, and veterinary medicine.

Health improvement plan (HIP): A plan made up of action steps to guide providers of essential public health services in addressing problems and gaps that have been identified in a needs assessment. A local plan should be linked to its State plan. Both plans should mobilize a variety of organizations to reduce health problems and improve the community's capacity to respond to public health needs. All providers of public health services—such as health departments, hospitals, schools, managed care providers under Medicaid, environmental health agencies, and medical and nursing organizations—should be included in a HIP. Health departments should play an especially active role in developing and implementing plans.

Health Status Indicators: Eighteen measures of health status defined in 1991 that represent a broad overview of a community's health and that can be used by various levels of government. Health Status Indicators include infant mortality, death rates for selected diseases, incidence rates of selected infectious diseases, measures regarding pregnancy and birth, childhood poverty, and air quality.

Leading Health Indicators: A set of 10 key determinants that influence health and can serve as a barometer for evaluating the health of the Nation. Leading Health Indicators include individual behaviors, the social and physical environment, and community health programs and address areas that most influence the health of individuals, communities, and the Nation.

Major health data systems: Data systems that provide tracking data for six or more national Healthy People 2010 objectives, including the Vital Statistics Cooperative Program, National Health Interview Survey, National Health and Nutrition Examination Survey, National Hospital Discharge Survey, and Behavioral Risk Factor Surveillance System.

Needs assessment: A formal process—which is the first step in a community health improvement process—of identifying problems and assessing the community's capacity to address health and social service needs. Examples include Assessment Protocol for Excellence in Public Health, Planned Approach to Community Health, Healthy Cities, and Model Standards.

Population-based prevention research: Research to identify effective public health prevention practices for particular populations.

Priority Data Needs: Sixteen measures of health status and risk behaviors of public health significance that were not included in the 1991 list of Health Status Indicators because of insufficient data at all levels of government. Subsequent to 1991, data sources have been developed for most of the Priority Data Needs. Priority Data Needs include indicators of selected chronic diseases, access to medical care, environmental exposures, and behavioral risks.

Public health and environmental health laboratory services: Laboratory services that include health and environmental assessment, surveillance, quality assurance, training, and consultation. These services also include a core set of tests in pathology, hematology, chemistry, microbiology, and environmental science.

Public Health in America: Statement that defines the public health vision and mission and describes the essential public health services. It was adopted in 1994 by the Public Health Functions Steering Committee, which included representatives of the U.S. Public Health Service agencies, American Public Health Association, Association of Schools of Public Health, Association of State and Territorial Health Officials, Environmental Council of the States, National Association of County and City Health Officials, National Association of State Alcohol and Drug Abuse Directors, National Association of State

Mental Health Program Directors, and Public Health Foundation.

Public health informatics: The systematic application of information and computer science and technology to public health practice, research, and learning.

Public health infrastructure: The resources needed to deliver the essential public health services to every community--people who work in the field of public health, information and communication systems used to collect and disseminate accurate data, and public health organizations at the State and local levels in the front lines of public health.

Public health workers: Individuals who are responsible for providing the essential public health services whether or not they work in an official health agency. At the State level, many workers have public health responsibilities even though they may work for nonpublic health agencies, such as environmental, agricultural, and education departments. This definition does not include those workers who occasionally contribute to the public health effort while fulfilling other responsibilities. Public health workers also are defined in the SOC system used by the Bureau of Labor Statistics, Bureau of the Census, and Bureau of Health Professions. This system has been updated and expanded to include additional categories of public health workers.

References

1. Institute of Medicine, Committee for the Study of the Future of Public Health. *The Future of Public Health*. Washington, DC: National Academy Press, 1988.

2. Harrell, J.A., and Baker, E.L. The essential services of public health. *Leadership in Public Health* 3(3):27-31, 1994.

3. Public Health Functions Steering Committee. *Public Health in America*. Fall 1994. Retrieved August 20, 1999. <www.health.gov/phfunctions/public.htm>

4. Baker, E.L.; Melton, R.J.; Stange, P.V.; et al. Health reform and the health of the public: Forging community health partnerships. *Journal of the American Medical Association* 272(16):1276-1282, 1994.

5. Public Health Service. *The Public Health Workforce: An Agenda for the 21st Century*. Washington, DC: U.S. Department of Health and Human Services, 1997.

6. Office of Management and Budget. 1998 Standard Occupational Classification (final version pending). *Federal Register*, August 5, 1998.

7. Richards, T.B.; Rogers, J.J.; Christenson, G.M.; Miller, C.A.; Taylor, M.S.; and Cooper, A.D. Evaluating local public health performance at a community level on a statewide basis. *Journal of Public Health Management and Practice* 1(4):70-83, 1995.

8. Turnock, B.J.; Handler, A.; Hall, W.; Postic, S.; Nalluri, R.; and Vaughn, E.H. Local health department effectiveness in addressing the core functions of public health. *Public Health Reports* 109:478-484, 1994.

9. Freedman, M.A. Health status indicators for the year 2000. *Statistical Notes*, No 1. Hyattsville, MD: National Center for Health Statistics, 1991.

10. Kim, I., and Kepple, K. Priority data needs: sources for national, state, and local-level data and data collection systems. *Statistical Notes*, No. 15. Hyattsville, MD: National Center for Health Statistics, 1997.

11. Yasnoff, W.A., and Sondik, E.J. Geographic information systems (GIS) in public health practice in the new millennium. *Journal of Public Health Management Practice* 5(4):ix, 1999.

12. Croner, C.M.; Sperling, J.; and Broome, F.R. Geographic information systems (GIS): New perspectives in understanding human health and environmental relationships. *Statistics in Medicine* 15:1961-1977, 1996.

13. Richards, T.B.; Croner, C.M.; Rushton, G.; Brown, C.K.; and Fowler, L. Geographic information systems and public health: Mapping the future. *Public Health Reports* 114:359-360, 1999.

14. Public Health Foundation. Measuring health objectives and indicators: 1997 State and local capacity survey. Washington DC: the Foundation, 1998.

15. National Center for Health Statistics. *Healthy People 2000 Review, 1998-99*. Hyattsville, MD: Public Health Service, 1999.

16. Center for Accountability and Performance. *Performance Measurement: Concepts and Techniques*. 2nd ed. Washington, DC: Ameri-

can Society for Public Administration, 1998.

17. Halverson, P.K.; Nicola, R.M.; and Baker, E.L. Performance measurement and accreditation of public health organizations: A call to action. *Journal of Public Health Management and Practice* 4(4):5-7, 1998.

18. Gebbie, K. State public health laws: an expression of constituency expectations. *Journal of Public Health Management and Practice* (in press).

19. Elbert, K.W.; Barry, M.; Bialek, R.; and Garufi, M. Measuring expenditures for essential public health services. Washington, DC: Public Health Foundation, 1996.

20. Barry, M.; Centra, L.; Pratt, E.; Brown, C.K.; and Giordano, L. Where do the dollars go? Measuring local public health expenditures. Washington, DC: Joint publication of the National Association of County and City Health Officials, National Association of Local Boards of Health, and Public Health Foundation, March 1998.

21. U.S. Department of Health and Human Services, National Institutes of Health, Office for Protection from Research Risks. *Protection of Human Subjects*. Revised June 18, 1991. Retrieved November 23, 1999 www.nih.gov/grants/oprr/humansubjects/45cfr46.htm

22. Snider, D.E., and Stroup, D.F. Defining research when it comes to public health. *Public Health Reports* 112:29-32, 1997.

24

Respiratory Diseases

Co-Lead Agencies: Centers for Disease Control and Prevention;
National Institutes of Health

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Goal

Promote respiratory health through better prevention, detection, treatment, and education.

Overview

Asthma, chronic obstructive pulmonary disease (COPD), and obstructive sleep apnea (OSA) are a significant public health burden to the United States.[1] Specific methods of detection, intervention, and treatment exist that may reduce this burden. Several behaviors and diseases that affect the respiratory system, such as tuberculosis, acquired immunodeficiency syndrome (AIDS), pneumonia, occupational lung disease, lung cancer, and smoking, are covered in other focus area chapters. Certain other important respiratory diseases, such as respiratory distress syndromes, sarcoidosis, and chronic sinusitis, which are difficult to define, detect, prevent, or treat, are not discussed in this chapter. Their omission, however, is not a reflection on the magnitude of the health problems associated with them.

Asthma and COPD are among the 10 leading chronic conditions causing restricted activity. After chronic sinusitis, asthma is the most common cause of chronic illness in children.[2] Methods are available to treat these respiratory diseases and promote respiratory health.

Asthma

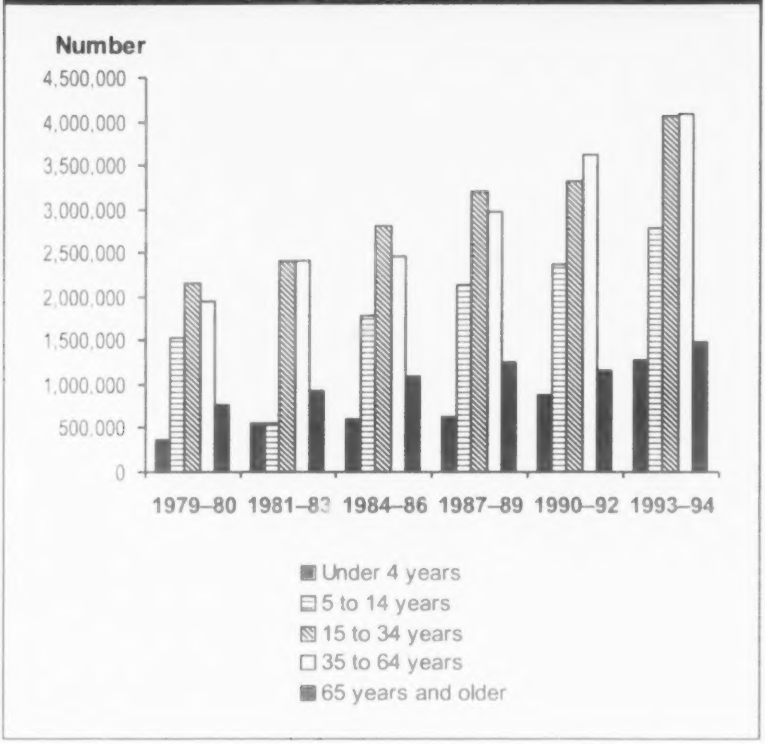
Issues and Trends

Asthma is a serious and growing health problem. An estimated 14.9 million persons in the United States have asthma.[3] The number of people with asthma increased by 102 percent between 1979-80 and 1993-94.[4]

Asthma is responsible for about 500,000 hospitalizations,[5] 5,000 deaths,[3] and 134 million days[5] of restricted activity a year. Yet most of the problems caused by asthma could be averted if persons with asthma and their health care providers managed the disease according to established guidelines. Effective management of asthma comprises four major components: controlling exposure to factors that trigger asthma episodes, adequately managing asthma with medicine, monitoring the disease by using objective measures of lung function, and educating asthma patients to become partners in their own care.[2, 6] Such prevention efforts are essential to interrupt the progression from disease to functional limitation and disability and to improve the quality of life for persons with asthma.

In 1996, asthma was the 10th most common principal diagnosis in emergency department (ED) visits.[5, 7] Among diseases commonly seen in outpatient

Number of People With Asthma
(United States, 1979–94)



Source: CDC, NCHS. Surveillance for Asthma—United States, 1960–1995. *Morbidity and Mortality Weekly Report* 47(SS-1);1-28, 1998.

departments, asthma was the ninth most frequent diagnosis in 1996.[8] In 1995, some 9 million physician office visits were made for asthma.[8] From 1990 to 1992, persons with asthma spent an estimated 64 million days in bed because of asthma, ranking asthma as the fourth highest chronic condition.[3] The proportion of people with asthma who are limited in activity increased slightly from 19.4 percent in 1986-88 to 19.6 percent in 1994-96.[9]

Direct medical expenditures for asthma amounted to $3.64 billion in 1990, and indirect economic losses accounted for an additional $2.6 billion.[10] Of direct medical care costs, approximately 57 percent was spent on hospitalizations ($1.6 billion), outpatient hospital visits ($190 million), and emergency department visits ($295 million). Physician-related services accounted for 14 percent of the total expenditures, including $347 million for outpatient services. Prescription medications represented 30 percent of direct medical costs. Such facts highlight the significant cost of hospital care for asthma, compared to the more frequently used and less costly outpatient and pharmaceutical services.

Indirect costs—nonmedical economic losses such as days missed from work or school, caregiver costs, travel and waiting time, early retirement due to disability, and premature death—account for slightly less than 50 percent of the total costs of asthma. Data suggest that the uneven distribution of costs of asthma relates to nonscheduled acute or emergency care, indicating poor asthma management and suboptimal outcomes.[11, 12]

Environmental and occupational factors contribute to illness and disability from asthma. Decreases in lung function and a worsening of asthma have been associated with exposure to allergens, indoor pollutants (for example, tobacco smoke), and ambient air pollutants (for example, ozone, sulfur dioxide, nitrogen dioxide, acid aerosols, and particulate matter).[13, 14] Approximately 25 percent of children in the United States live in areas that exceed the Federal Government's standard for ozone.[15] Occupational factors cause or trigger asthma episodes in 5 to 30 percent of adults with the disease.[16] Environmental factors are associated with upper respiratory infections, which contribute to illness and disability in children and adults.[17] (See Focus Area 8. Environmental Health.)

Disparities

Within the U.S. population, the health, economic, and social burdens of asthma vary. Disproportionate rates of death, hospitalization, emergency room use, and disability from asthma occur in specific age, gender, racial, and ethnic groups.

While the number of adults with asthma is greater than the number of children with asthma, the asthma rate is rising more rapidly in preschool-aged children than in any other group.[1] In 1995, the rate of self-reported asthma among children and adolescents under age 18 years was 7.5 percent, compared to 5.7 percent among the general population. The rates were higher in boys under age 18 years than in girls in the same age group. The rates of self-reported asthma were higher for women (6.7 percent) than men (5.2 percent) and higher for African Americans (6.7 percent) than whites (5.6 percent).[1] Among adults, women of all races have higher rates of illness and death from asthma than men.[18]

Death from asthma is 2 to 6 times more likely to occur among African Americans and Hispanics than among whites.[1] Although the number of deaths annually from asthma is low compared to other chronic diseases, the death rate for children aged 5 to 14 years and young adults aged 15 to 24 years doubled from 1979-80 to 1993-95 (from 1.5 to 3.7 deaths per million children aged 5 to 14 years and 2.8 to 6.3 deaths per million persons aged 15 to 34 years, respectively).[4] In 1993-95, death rates are slightly higher overall in women than in men.[4]

Rates of hospitalization for asthma demonstrate similar variations. Rates for African Americans are almost triple those for whites. Rates are higher among women than among men.[1] Asthma hospitalization rates have increased dramatically among children under age 5 years. From 1980 to 1993, the rate increased from 36 to 65 children hospitalized per 10,000 children under age 1 year. Some of this increase may be related to changes in diagnostic practices and changes in coding and reimbursement, but a large portion represents a true increase in illness and disability.

In the inner city, patients frequently use EDs for asthma care. In 1993 and 1994, African Americans were 4 times more likely than whites to visit an ED because of asthma.[1] Asthma patients in general and high-risk inner-city patients—in particular, those with a history of severe asthma who were hospitalized or visited the ED for asthma within the previous 2 years—need to be able to recognize the signs and symptoms of uncontrolled asthma and know how to respond appropriately.

The economic burden of asthma disproportionately affects patients with severe disease. Socioeconomic status, particularly poverty, appears to be an important contributing factor to asthma illness, disability, and death. In the United States, the rate of asthma cases for nonwhites is only slightly higher than for whites, yet the death, hospitalization, and ED visit rates for nonwhites are more than twice those for whites.[1] Although reasons for these differences are unclear, they likely result from multiple factors: high levels of exposure to environmental tobacco smoke, pollutants, and environmental allergens (for example, house dust mites, cockroach particles, cat and dog dander, and possibly rodent dander and mold); a lack of access to quality medical care; and a lack of financial resources and social support to manage the disease effectively on a long-term basis.[19] Research into the role of socioeconomic factors is needed to identify additional prevention opportunities.

Opportunities

Scientific research has led to greater asthma control than was available in the early 1980s.[6] Effective management of asthma includes four components: avoiding or controlling the factors that may make asthma worse (for example, environmental and occupational allergens and irritants), taking appropriate medications tailored to the severity of the disease, objective monitoring of the disease by the patient and the health care professional, and actively involving the patient in managing the disease.[6] Effective asthma management reduces the need for hospitalizations and urgent care visits (in either an ED or physician's office) and enables patients to enjoy normal activities.[14, 20]

Advances in human genetics related to asthma are expected to provide better information about the contribution of genetic variation to the development of disease when people are exposed to certain environmental factors. The use of this genetic information will improve targeted disease prevention and health management strategies for respiratory diseases.

Patient education is one of four components of effective asthma management.[6] Patients who are taught asthma self-management skills are able to manage and control their disease better than patients who do not receive education.[6] Patients need to learn to work with health care providers to optimize asthma care. Thus, both patients and health care providers need to be trained and educated on effective asthma management. Health outcomes for asthma—illness, disability, quality of life, and death—are related directly to the actions of health care professionals and patients. The National Asthma Education and Prevention Program (NAEPP) provides guidelines for diagnosis and management which should be incorporated into the curricula of health professional schools.[6, 21] Currently, there are no national data systems for tracking the training of health care providers in asthma management. Therefore, the issue is not covered in this focus area's objectives. It represents an important research and data collection agenda for the coming decade. In addition, research to identify the primary causes of development of asthma is a high priority. Such research can provide a scientific basis for efforts to prevent the development of asthma.

To control asthma effectively, asthma patients, particularly those on daily medication, need an "asthma action plan" developed under their physician's guidance. The plan spells out when and how to take medicines correctly, as well as what to do when asthma worsens. The treatment of persistent asthma emphasizes daily long-term therapy aimed at the underlying inflammation and preventing symptoms, rather than relying solely on treating symptoms with short-acting inhaled medication, such as a short-acting beta agonist medication. Use of more than one canister of the medication per month is an indication of uncontrolled asthma and the need to start or increase long-term preventive therapy. Patients also need to work with health care providers during followup visits, particularly after being hospitalized, to make sure they understand and are able to follow the long-term management plan.

Working with local community groups to mobilize community resources for a comprehensive, culturally and linguistically competent approach to controlling asthma among high-risk populations is a priority. From a community-based perspective, States need to track occupational and environmental factors that cause or trigger asthma episodes. Such surveillance efforts should include collecting State-based data on the proportion of the population with asthma and monitoring occupational and environmental exposures and their impact on illness and disability related to asthma. Efforts directed to improving the environmental management of asthma also include reducing exposure to allergens and irritants, such as environmental tobacco smoke, and outdoor air pollution from ozone, sulfur dioxide, and particulate diesel matter. (See Focus Area 8. Environmental Health.)

Professional organizations, lay volunteer groups, Federal agencies, and the private sector have worked together and with NAEPP to implement a spectrum of asthma programs at national and local community levels. For example, numerous publications, media campaigns, and conferences target different audiences. Intensified efforts are planned to reach primary care providers, patients, and school personnel.[18, 21] A high-level work group convened by the U.S. Department of Health and Human Services in 1997 assessed the most urgent needs for tackling the growing problem of asthma. The work group's department-wide strategic plan, Action

Against Asthma, identified opportunities and presented a coordinated approach for improving asthma prevention and management.[18]

Chronic Obstructive Pulmonary Disease

Issues and Trends

COPD includes chronic bronchitis and emphysema—both of which are characterized by irreversible airflow obstruction and often exist together. Similar to asthma, COPD may be accompanied by an airway hyper responsiveness. Most patients with COPD have a history of cigarette smoking. COPD worsens over time with continued exposure to a causative agent—usually tobacco smoke or sometimes a substance in the workplace or environment.

COPD occurs most often in older people. As much as 10 percent of the population 65 years of age and over is estimated to have COPD.[2] COPD has a major impact on health care, illness, disability, and death in the older population, and the magnitude of the problem is growing. Since 1980, the prevalence and age-adjusted death rate for COPD increased more than 30 percent.[2, 22, 23] Most of the increase occurred in people over age 65 years. Taking into account the expected aging of the U.S. population over the next 10 to 30 years as well as the improved management of other smoking-related diseases, any decline in the proportion of persons with COPD is unlikely without substantial changes in risk factors, mainly reductions in cigarette smoking. This is important for both men and women, given the modest decline in cigarette smoking rates from 1990 to 1995.[23]

Between 80 and 90 percent of COPD is attributable to cigarette smoking. However, not all smokers develop COPD, and not all patients with COPD are smokers or have smoked in the past.[24, 25] Individual susceptibility to the adverse health effects of cigarette smoke on the lung appears to vary within the general population. Some 10 to 15 percent of smokers show a rate of decline in lung function that will result in COPD with severe disability. Smoking cessation is the only treatment that slows the decline. Susceptible smokers who stop smoking do not regain lost lung function,[26] but the rate of loss will return to what is normal for a nonsmoker.

How cigarette smoking causes COPD is an active area of research. The development of COPD—in particular, emphysema—is thought to be due to a chemical imbalance in the lungs caused by cigarette smoke.[27] In some individuals, emphysema occurs because of a genetic deficiency. Emphysema due to genetic deficiency, called familial emphysema, occurs even in nonsmokers, but smoking hastens its occurrence. Familial emphysema probably accounts for less than 5 percent of all cases of COPD.[28]

Smoking and occupational exposures together cause respiratory diseases and lung cancer.[29, 30] Miners, firefighters, metal workers, grain handlers, cotton workers, paper mill workers, agricultural workers, construction workers who handle cement, and others employed in occupations associated with prolonged exposure to dusts, fumes, or gases develop significant airflow obstruction, coughing, phlegm, dyspnea, wheezing, and reduced lung function.[28, 30, 31]

Population studies have shown that chronic exposure to air pollution has an independent adverse effect on lung function.[32, 33] A multi-year study of the respiratory effects of long-term exposure to environmental tobacco smoke and air pollution reported that both long-term ozone and childhood exposure to maternal tobacco smoke were associated with diminished lung function in college students.[34] Viral infections also may contribute to susceptibility to COPD, and they are considered to play a role in the onset of airflow obstruction.

The direct costs of health care services and indirect costs through loss of productivity related to COPD amounted to $26 billion in 1998.[27] About 14 million persons in the United States have COPD—about 12.5 million have chronic bronchitis and 1.9 million have emphysema.[28] Emphysema has not increased, but since 1980, cases of chronic bronchitis increased 75 percent.[28]

Because national data systems will not be available in the first half of the decade for tracking progress, two subjects of interest concerning respiratory diseases are not addressed in this focus area's objectives. Representing a research and data collection agenda for the coming decade, the topics cover cultural competence and early detection. The first topic addresses increasing the proportion of primary care providers who are trained to provide culturally competent health services to racial and ethnic groups seeking care for chronic obstructive pulmonary disease. The second involves increasing the proportion of primary care providers who are trained to use appropriate lung function tests to recognize the early signs of chronic obstructive pulmonary disease before the disease becomes serious and disabling.

Disparities

Reliable statistics are not as available for COPD total cases, illness, disability, or death in African Americans, Hispanics, and other ethnic groups as for whites.[35, 36] From 1982 to 1984, the proportion of adults with COPD was 6.2 percent among whites and 3.2 percent among African Americans. In 1982, the age-adjusted COPD death rate for whites was 16.6 deaths per 1,000 population and 12.8 deaths per 1,000 for African Americans. Among the Hispanic groups studied, Puerto Ricans demonstrated a higher proportion of chronic bronchitis (2.9 percent) than Mexican Americans (1.7 percent) or Cuban Americans (1.7 percent).[35, 36]

In 1995, the proportion of the population with COPD was 5 percent in men aged 45 to 64 years and 11 percent in men aged 65 years or older. The proportion was 10 percent in women aged 45 to 64 years and 9 percent in women aged 65 to 74 years.

Death from COPD is more common in men than in women, and the death rate increases steeply with age.[28, 37] Men and women have similar COPD death rates before age 55 years, but the rate for men rises thereafter. At age 70 years, the rate for men is more than double that for women, and at age 85 years and older, the COPD death rate for men is 3.5 times that for women.[38] The proportion was 8 percent for whites aged 45 to 64 years and 10 percent for whites aged 65 years and older. The proportion of African Americans with COPD was 6 percent for those aged 45 to 64 years and 8 percent for those aged 65 years and older.[2] COPD death rates were lower in the Hispanic groups than in non-Hispanic whites; however, these rates have been increasing for Hispanics.[35]

Women might be more susceptible than men to developing COPD when exposed to risk factors such as tobacco smoke.[39] The beneficial effects of stopping smoking on the rate of lung function decline may be greater for women than men.[40]

Opportunities

Primary care physicians are in a key position to provide optimal care to patients with COPD and to provide counseling during clinical or health center visits to patients who smoke. Effective tests are available to screen patients for COPD, and primary care physicians need to be trained in the latest methods to detect and treat the disease.

Obstructive Sleep Apnea

Issues and Trends

Some 18 million persons in the United States were estimated to have OSA in 1993.[41] OSA affects all races, ages, and socioeconomic and ethnic groups.[42] Because OSA causes serious disturbances in normal sleep patterns, patients experience excessive daytime sleepiness and impaired performance. Common consequences of OSA range from personality changes and sexual dysfunction to falling asleep at work or while driving.[41, 42]

OSA symptoms include many repeated involuntary breathing pauses during sleep. The breathing pauses often are accompanied by choking sensations that may wake the patient. Other symptoms include intermittent snoring, awakening from sleep (poor sleep), early morning headaches, and excessive daytime sleepiness.

OSA can increase the seriousness of other lung diseases that decrease airflow, such as asthma and COPD. Cardiovascular deaths alone due to OSA have been estimated at 38,000 a year.[41] Individuals with OSA often do not recognize reductions in alertness, diminished productivity, and discord in interpersonal relationships as part of the syndrome. Persons affected by OSA, for example, are seven times more likely to be involved in multiple vehicular crashes.[43] In children, OSA can disrupt sleep. OSA also may cause daytime behavioral problems that affect workplace performance and affect their learning ability in school.

Infants with siblings or parents who have OSA inherit an increased risk of sudden infant death syndrome (SIDS).[44] This tragic sleep-related breathing disorder takes the lives of more infants than all other causes combined.

Disparities

OSA is prevalent particularly in men over age 50 years and in postmenopausal women, when hormonal changes appear to increase risk. The risk of OSA also is increased in certain racial and ethnic groups. Among young African Americans, the likelihood of experiencing OSA symptoms is twice that of young whites.[45] Nearly 50 percent of OSA patients have high blood pressure.[46, 47, 48]

Opportunities

A major factor in the pervasiveness of OSA's effects on health and society has been the failure to educate Americans—and especially health care practitioners—about the disorder. A wide range of behavioral, mechanical, and surgical treatments can be used to manage OSA symptoms. Providing persons at risk with culturally and linguistically appropriate information about OSA could enable them to prevent or lessen the effects of OSA. Improved awareness of OSA symptoms represents a major public health challenge.

Primary care providers are an important barometer of OSA awareness because they are a first stop for patients who are seeking appropriate diagnosis and treatment. However, only 79 cases of sleep disorder were diagnosed in a sample of 10 million patient records from 1989 and 1990.[41] In 1990 about a third of the medical schools in the United States offered no training in sleep medicine, and another third provided less than 2 hours on average for all sleep topics.[40] Data systems to track the training of health care providers in OSA over the decade are not currently available, and therefore the issue is not addressed in this focus area's objectives. However, it represents an important research and data collection agenda. In the absence of strong educational models for physicians, the risk remains high that OSA will be misdiagnosed and mismanaged.

The National Commission on Sleep Disorders Research[41] was established by the U.S. Congress in 1988 to assess the societal and economic impact of sleep disorders and the resources available to promote the prevention, diagnosis, and treatment of such disorders. In a 1994 report to Congress, the Commission concluded that even though the science of sleep disorders is not fully developed, such disorders can be prevented. The commission recommends that research on the natural history of sleep disorders be made an urgent national concern. Epidemiologic studies must be conducted to evaluate risk factors that lead to sleep disorders and to determine which sleep disorders lead to other serious health problems.

Interim Progress Toward Year 2000 Objectives

For the three objectives specific to asthma in Healthy People 2000, available data indicate movement away from the targets as the rate of hospitalizations and activity limitation increase and a movement toward the target for increasing the proportion of persons with asthma who receive patient education. There were no objectives in Healthy People 2000 for COPD and OSA.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Healthy People 2010—Summary of Objectives

Respiratory Diseases

Goal: Promote respiratory health through better prevention, detection, treatment, and education.

Number	Objective
Asthma	
24-1	Deaths from asthma
24-2	Hospitalizations for asthma
24-3	Hospital emergency department visits for asthma
24-4	Activity limitations
24-5	School or work days lost
24-6	Patient education
24-7	Appropriate asthma care
24-8	Surveillance systems
Chronic Obstructive Pulmonary Disease (COPD)	
24-9	Activity limitations due to chronic lung and breathing problems
24-10	Deaths from COPD
Obstructive Sleep Apnea (OSA)	
24-11	Medical evaluation and followup
24-12	Vehicular crashes related to excessive sleepiness

Healthy People 2010 Objectives

Asthma

24-1. Reduce asthma deaths.

Target and baseline:

Objective	Age Group	1998 Baseline*	2010 Target
		Rate per Million	
24-1a.	Children under age 5 years	1.7	1.0
24-1b.	Children aged 5 to 14 years	3.2	1.0
24-1c.	Adolescents and adults aged 15 to 34 years	5.9	3.0
24-1d.	Adults aged 35 to 64 years	17.0	9.0
24-1e.	Adults aged 65 years and older	87.5	60.0

*Preliminary data.

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Select Age Groups, 1997*	Asthma Deaths 24-1a. Children Under Age 5 Years	24-1b. Children Aged 5 to 14 Years	24-1c. Persons Aged 15 to 34 Years	24-1d. Persons Aged 35 to 64 Years	24-1e. Persons Aged 65 Years and Older
	Rate per Million				
TOTAL	1.8	3.1	6.2	18.9	85.9
Race and ethnicity					
American Indian or Alaska Native	DSU	DSU	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU	22.3	141.2
Asian	DSU	DSU	DSU	DSU	DSU
Native Hawaiian and other Pacific Islander	DSU	DSU	DSU	DSU	DSU
Black or African American	7.6	9.7	17.4	52.7	120.2
White	DSU	1.8	4.3	14.3	81.5

Select Age Groups, 1997*	Asthma Deaths				
	24-1a. Children Under Age 5 Years	24-1b. Children Aged 5 to 14 Years	24-1c. Persons Aged 15 to 34 Years	24-1d. Persons Aged 35 to 64 Years	24-1e. Persons Aged 65 Years and Older
	Rate per Million				
Hispanic or Latino	DSU	DSU	4.8	17.1	81.8
Not Hispanic or Latino	2.2	3.4	6.4	19.1	86.1
Black or African American	7.8	10.1	18.1	54.6	122.7
White	DSU	1.9	4.2	13.8	81.0
Gender					
Female	DSU	2.8	5.2	23.5	99.5
Male	2.3	3.3	7.2	14.2	66.3
Education (aged 25 to 64 years)					
Less than high school	NA	NA	12.5	30.6	NA
High school graduate	NA	NA	10.5	23.4	NA
At least some college	NA	NA	4.3	11.1	NA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable. NA = Not applicable.

*New data for population groups will be added when available.

24-2. Reduce hospitalizations for asthma.

Target and baseline:

Objective	Age Group	1997 Baseline	2010 Target
		Rate per 10,000	
24-2a.	Children under age 5 years	60.9	25
24-2b.	Children and adults aged 5 to 64 years*	13.8	8
24-2c.	Adults aged 65 years and older*	19.3	10

*Age adjusted to the year 2000 standard population.

Target setting method: Better than the best.

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

Select Age Groups, 1997	Asthma Hospitalizations 24-2a. Children Under Age 5 Years	 24-2b. Persons Aged 5 to 64 Years*	 24-2c. Persons Aged 65 Years and Older*
	Rate per 10,000		
TOTAL	60.9	13.8	19.3
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	125.6	26.4	26.5
White	33.3	9.3	15.4
Hispanic or Latino	DSU	DSU	DSU
Not Hispanic or Latino	DSU	DSU	DSU
Black or African American	DSU	DSU	DSU
White	DSU	DSU	DSU
Gender			
Female	45.3	17.3	24.7
Male	75.9	10.2	11.7

DNA = Data have not been analyzed.DNC = Data are not collected.DSU = Data are statistically unreliable.

*Age adjusted to the year 2000 standard population.

24-3. Reduce hospital emergency department visits for asthma.

Target and baseline:

Objective	Age Group	1995-97 Baseline	2010 Target
		Rate per 10,000	
24-3a.	Children under age 5 years	150.0	80
24-3b.	Children and adults aged 5 to 64 years	71.1	50
24-3c.	Adults aged 65 years and older	29.5	15

Target setting method: Better than the best.

Data source: National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

Age Groups, 1995–97	Hospital Emergency Department Visits for Asthma		
	24-3a. Children Under Age 5 Years	**24-3b. Persons Aged 5 to 64 Years**	**24-3c. Persons Aged 65 Years and Older**
	Rate per 10,000		
TOTAL	150.0	71.1	29.5
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	407.2	191.7	90.8
White	101.7	53.4	23.1
Hispanic or Latino	DSU	DSU	DSU
Not Hispanic or Latino	DSU	DSU	DSU
Black or African American	DSU	DSU	DSU
White	DSU	DSU	DSU
Gender			
Female	103.0	83.6	37.8
Male	195.5	57.9	17.9

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

24-4. Reduce activity limitations among persons with asthma.

Target: 10 percent.

Baseline: 19.5 percent of persons with asthma in 1994-96 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Persons With Asthma, 1994–96	Activity Limitations Percent
TOTAL	19.5
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	26.3
White	18.3
Hispanic or Latino	22.4
Not Hispanic or Latino	19.2
Black or African American	26.0
White	17.8
Gender	
Female	20.9
Male	17.3
Family income level	
Poor	28.2
Near poor	20.0
Middle/high income	16.4

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

24-5. (Developmental) Reduce the number of school or work days missed by persons with asthma due to asthma.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

24-6. Increase the proportion of persons with asthma who receive formal patient education, including information about community and self-help resources, as an essential part of the management of their condition.

Target: 30 percent.

Baseline: 6.4 percent of persons with asthma received formal patient education in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Persons With Asthma, 1993*	**Patient Education** Percent
TOTAL	10
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	DSU
White	10
Hispanic or Latino	DSU
Not Hispanic or Latino	11
Black or African American	DSU
White	11
Gender	
Female	11
Male	9
Family income level	
Poor	DSU
Near poor	DSU
Middle/high income	11

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

24-7. (Developmental) Increase the proportion of persons with asthma who receive appropriate asthma care according to the NAEPP Guidelines.

24-7a. Persons with asthma who receive written asthma management plans from their health care provider.

24-7b. Persons with asthma with prescribed inhalers who receive instruction on how to use them properly.

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24-7c. Persons with asthma who receive education about recognizing early signs and symptoms of asthma episodes and how to respond appropriately, including instruction on peak flow monitoring for those who use daily therapy.

24-7d. Persons with asthma who receive medication regimens that prevent the need for more than one canister of short-acting inhaled beta agonists per month for relief of symptoms.

24-7e. Persons with asthma who receive followup medical care for long-term management of asthma after any hospitalization due to asthma.

24-7f. Persons with asthma who receive assistance with assessing and reducing exposure to environmental risk factors in their home, school, and work environments.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

24-8. (Developmental) Establish in at least 15 States a surveillance system for tracking asthma death, illness, disability, impact of occupational and environmental factors on asthma, access to medical care, and asthma management.

Potential data sources: Council of State and Territorial Epidemiologists; Association of Schools of Public Health.

Chronic Obstructive Pulmonary Disease

24-9. Reduce the proportion of adults whose activity is limited due to chronic lung and breathing problems.

Target: 1.5 percent.

Baseline: 2.2 percent of adults had activity limitations due to chronic lung and breathing problems in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 45 Years and Older, 1997	Chronic Obstructive Pulmonary Disease Cases Percent
TOTAL	2.2
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	2.3
White	2.3
Hispanic or Latino	1.7
Not Hispanic or Latino	2.3
Black or African American	2.2
White	2.3
Gender	
Female	2.1
45 to 64 years	1.6
65 years and older	3.0
Male	2.5
45 to 64 years	1.6
65 years and older	4.1
Family income level	
Poor	5.2
Near poor	4.0
Middle/high income	1.8

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

24-10. Reduce deaths from chronic obstructive pulmonary disease (COPD) among adults.

Target: 18 deaths per 100,000 adults.

Baseline: 120.9 deaths from COPD per 100,000 persons aged 45 years and older in 1998 (preliminary data; age adjusted to the year 2000 standard population).

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Target setting method: 85 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Adults Aged 45 Years and Older, 1997*	**Chronic Obstructive Pulmonary Disease Deaths** Rate per 100,000
TOTAL	117.4
Race and ethnicity	
American Indian or Alaska Native	75.9
Asian or Pacific Islander	55.1
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	82.4
White	122.2
Hispanic or Latino	55.3
Not Hispanic or Latino	120.8
Black or African American	84.2
White	125.3
Gender	
Female	107.4
Male	134.9
Education (ages 25 to 64 years)	
Less than high school	18.8
High school graduate	12.9
At least some college	4.6

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

*New data for population groups will be added when available.

Obstructive Sleep Apnea

24-11. (Developmental) Increase the proportion of persons with symptoms of obstructive sleep apnea whose condition is medically managed.

24-11a. Persons with excessive daytime sleepiness, loud snoring, and other signs associated with obstructive sleep apnea who seek medical evaluation.

24-11b. Persons with excessive daytime sleepiness, loud snoring, and other signs associated with obstructive sleep apnea who receive followup medical care for long-term management of their condition.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

24-12. (Developmental) Reduce the proportion of vehicular crashes caused by persons with excessive sleepiness.

Potential data sources: National Health Interview Survey (NHIS), CDC, NCHS; Fatal Accident Reporting System (FARS), U.S. Department of Transportation, National Highway Traffic Safety Administration.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-10. Delay or difficulty in getting emergency care

7. Educational and Community-Based Programs

7-8. Satisfaction with patient education

7-10. Culturally appropriate community health promotion

8. Environmental Health

8-1. Harmful air pollutants

8-2. Alternative modes of transportation

8-3. Cleaner alternative fuels

8-4. Airborne toxins

8-14. Toxic pollutants

8-16. Indoor allergens

8-17. Office building air quality

8-20. School policies to protect against environmental hazards

8-23. Substandard housing

8-26. Information systems used for environmental health

8-27. Monitoring environmentally related diseases

8-28. Local agencies using surveillance data for vector control

11. Health Communication

11-6. Satisfaction with providers' communication skills

15. Injury and Violence Prevention

15-15. Deaths from motor vehicle crashes
15-17. Nonfatal motor vehicle injuries

20. Occupational Safety and Health

20-1. Work-related injury deaths
20-2. Work-related injuries
20-4. Pneumoconiosis deaths

22. Physical Activity and Fitness

22-6. Moderate physical activity in young persons
22-7. Vigorous physical activity in young people

23. Public Health Infrastructure

23-2. Public access to information and surveillance data
23-6. Data for all population groups
23-6. National tracking of Healthy People 2010 objectives
23-7. Timely release of data on objectives
23-10. Continuing education and training by public health agencies
23-16. Data on public health expenditures
23-17. Prevention research

27. Tobacco Use

27-1. Adult tobacco use
27-2. Adolescent tobacco use
27-3. Initiation of tobacco use
27-4. Age at first use of tobacco
27-5. Smoking cessation by adults
27-6. Smoking cessation during pregnancy
27-7. Smoking cessation by adolescents
27-8. Insurance coverage of cessation treatment
27-9. Exposure to tobacco smoke at home among children
27-10. Exposure to environmental tobacco smoke
27-11. Smoke-free and tobacco-free schools
27-12. Worksite smoking policies
27-13. Smoke-free indoor air laws
27-14. Enforcement of illegal tobacco sales to minors laws
27-15. Retail license suspension for sales to minors
27-16. Tobacco advertising and promotion targeting adolescents and young adults
27-17. Adolescent disapproval of smoking
27-18. Tobacco control programs
27-19. Preemptive tobacco control laws
27-20. Tobacco product regulation
27-21. Tobacco tax

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Ambulatory care: Medical care provided at hospital emergency rooms and outpatient departments.

Asthma: A lung disease characterized by airway constriction, mucus secretion, and chronic inflammation, resulting in reduced airflow and wheezing, coughing, chest tightness, and difficulty breathing.

Chronic bronchitis: A lung disease characterized by the presence of chronic productive cough most days for 3 months in each of 2 successive years.

Chronic obstructive pulmonary disease (COPD): A lung disease characterized by airflow obstruction due to chronic bronchitis and emphysema, two diseases that often occur together. COPD is one of the most common respiratory conditions among adults worldwide and is the fourth leading cause of death in the United States.

Dyspnea: Shortness of breath.

Emphysema: Abnormal permanent enlargement of the airspaces in the lungs accompanied by coughing and difficulty breathing.

Epidemiologic studies: Studies of disease occurrence.

Obstructive sleep apnea (OSA): An illness characterized by snoring, partial or complete cessation of breathing during sleep, reductions in blood oxygen levels, severe sleep disruptions, and excessive daytime sleepiness. OSA is a chronic breathing problem with serious effects on individual health and productivity, including an inheritable risk of sudden infant deaths, behavior and learning disturbances, injury from accidents, and reduced quality of life.

Rate: The basic measure of disease occurrence that most clearly expresses the probability of risk of disease in a defined population over a specified period of time. A rate is defined as:

$$\frac{\text{Number of events}}{\text{Population at risk}}$$

References

1. Mannino, D.M.; Homa, D.M.; Pertowski, C.A.; Ashizawa, A.; Nixon, L.L.; Johnson, C.A.; et al. Surveillance for asthma—United States, 1960-1995. *Morbidity and Mortality Weekly Report CDC Surveillance Summaries* 47:1-27, 1998.

2. National Center for Health Statistics (NCHS). Current estimates from the National Health Interview Survey, 1995. National Center for Health Statistics. *Vital and Health Statistics*, Series 10(199), 1998.

3. National Heart, Lung, and Blood Institute. *Data Fact Sheet. Asthma Statistics.* Bethesda, MD: National Institutes of Health, Public Health Service, January 1999.

4. Mannino, D.M.; Homa, D.M.; Pertowski, C.A.; et al. Surveillance for asthma—United States, 1960-1995. *Morbidity and Mortality Weekly Report CDC Surveillance Summaries* 47(1):1-27, April 24, 1998.

5. NCHS. Current estimates from the National Health Interview Survey, 1990-92. National Center for Health Statistics. *Vital and Health Statistics*, Series 10(194), 1997.

6. National Asthma Education and Prevention Program. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma.* NIH Pub. No. 97-4051. Bethesda, MD: National Institutes of Health, 1997.

7. Panhuysen, C.I.; Vonk, J.M.; Koeter, G.H.; Schouten, J.P.; van Altena, R.; Bleecker, E.R.; et al. Adult patients may outgrow their asthma: A 25-year follow-up study [published erratum appears in *American Journal of Respiratory and Critical Care Medicine* 156(2, Pt 1):674]. *American Journal of Respiratory and Critical Care Medicine* 155:1267-1272, 1997.

8. NCHS. Ambulatory care visits to physicians' offices, hospital outpatient departments, and emergency departments: United States, 1996. National Center for Health Statistics. *Vital and Health Statistics*, Series 13(134), 1998.

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9. NCHS. *Healthy People 2000 Review. 1998-99*. Hyattsville, MD: Public Health Service, 1999.

10. Weiss, K.B.; Gergen, P.J.; and Hodgson, T.A. An economic evaluation of asthma in the United States. *New England Journal of Medicine* 326:862-866, 1992.

11. Sullivan, S.; Elixhauser, S.; Buist, A.S.; Luce, B.R.; Eisenberg, J.; and Weiss, K.B. National Asthma Education and Prevention Program working group report on the cost effectiveness of asthma care. *American Journal of Respiratory and Critical Care Medicine* 154(3, Pt. 2):584-595, September 1996.

12. Glaxco Canada. *The Costs of Asthma in Canada*. Princeton, NJ: Communications Media for Education, 1993.

13. Koren, H.S. Environmental risk factors in atopic asthma. *International Archives of Allergy and Immunology* 113:65-68, 1997.

14. Becklake, M.R., and Ernst, P. Environmental factors. *Lancet* 350(suppl. 2):10-13, 1997.

15. Office of Air Quality Planning and Standards, Environmental Protection Agency. *National Air Quality and Emissions Report, 1997*. CPA Pub. No. EPA 454/R-98-016. Research Triangle Park, NC: Environmental Protection Agency, 1998.

16. Schwartz, D.A., and Peterson, M.W. Occupational lung disease. *Advances in Internal Medicine* 42:269-312, 1997.

17. Busse, W.W.; Gern, J.E.; and Dick, E.C. The role of respiratory viruses in asthma. *Ciba Foundation Symposium* 206:208-213, 1997.

18. U.S. Department of Health and Human Services. *Action Against Asthma: A strategic plan for the Department of Health and Human Services*. Washington, DC, draft March 22, 1999.

19. Wade, S.; Weil, C.; Holden, G.; Mitchell, H.; Evans, R.; Kruszon-Moran, D.; et al. Psycho social characteristics of inner-city children with asthma: A description of the NCICAS psychosocial protocol. National Cooperative Inner-City Asthma Study. *Pediatric Pulmonology* 24:263-276, 1997.

20. Evans, D.; Mellins, R.; Lobach, K.; Ramos-Bonoan, C.; Pinkett-Heller, M.; Wiesemann, S.; et al. Improving care for minority children with asthma: Professional education in public health clinics. *Pediatrics* 99:157-164, 1997.

21. National Heart, Lung, and Blood Institute. *National Asthma Education and Prevention Program Summary Report*. Bethesda, MD: National Institutes of Health, March 1999.

22. NCHS. *Health United States. Prevalance of Selected Chronic Conditions*. Hyattsville, MD: NCHS, 1986.

23. NCHS. *Health United States*, with *Health and Aging Chartbook*. Hyattsville, MD: NCHS, 1999.

24. Bone, R.C.; Dantzker, D.R.; and George, R.B. *Pulmonary and Critical Care Medicine*. Chapter G-1. St. Louis, MO: Mosby Year Book, 1993..

25. Sherril, D.L.; Lebowitz, M.D.; and Burrows, B. Epidemiology of COPD. *Clinical Chest Medicine* 11:375-388, 1990.

26. Fletcher, C., and Peto, R. The natural history of COPD. *British Medical Journal* 1:1645-1648, 1977.

27. Fishman, A.P. *Pulmonary Diseases and Disorders*. 2nd ed. New York, NY: McGraw-Hill, Inc., 1994.

28. National Heart, Lung, and Blood Institute. *Morbidity and Mortality: 1998 Chartbook on Cardiovascular, Lung and Blood Diseases*. Bethesda, MD: National Institutes of Health, October 1998.

29. Schwartz, D.A., and Peterson, M.W. Occupational lung disease. *Disease-A-Month* 44:41-84, 1998.

30. Wynder, E.L., and Hoffmann, D. Tobacco and health: a societal challenge. *New England Journal of Medicine* 300:894-903, 1979.

31. Bakke, S.; Baste, V.; Hanoa, R.; and Gulsvik, A. Prevalence of obstructive lung disease in a general population: Relation to occupational title and exposure to some airborne agents. *Thorax*. 46(12):863-870, 1991.

32. Souza, M.B.; Saldiva, P.H.; Pope, III, C.A.; and Capelozzi, V.L. Respiratory changes due to long-term exposure to urban levels of air pollution: a histopathologic study in humans. *Chest* 113:1312-1318, 1998.

33. Dockery, D.W., and Brunekreef, B. Longitudinal studies of air pollution effects on lung function. *American Journal of Respiratory and Critical Care Medicine* 154(6, Pt 2):S250-S256, 1996.

34. Galizia, A., and Kinney, P.L. Long-term residence in areas of high ozone: associations with respiratory health in a nationwide sample of nonsmoking young adults. *Environmental Health Perspectives* 107(8):675-679, 1999.

35. Coultas, D.B.; Gong, Jr., H.; Grad, R.; et al. Respiratory diseases in minorities of the United States. *American Journal of Respiratory and Critical Care Medicine* 149:S93-S131, 1993.

36. Gibson, K.F.; Aguayo, S.M.; Flowers, J.C.; et al. NHLBI special report. Respiratory diseases disproportionately affecting minorities. *Chest* 108:1380-1392, 1995.

37. Higgins, M.W., and Keller, J.B. Trends in COPD morbidity and mortality in Tecumseh, Michigan. *Annual Review of Respiratory Diseases* 140:S42-S48, 1989.

38. Feinlieb, M.; Rosenburg, H.M.; Collins, J.G.; et al. Trends in COPD morbidity and mortality in the United States. *American Journal of Respiratory Diseases* 140:S9-S18, 1989.

39. Tashkin, D.P.; Altose, M.F.; Bleecker, E.R.; et al. The Lung Health Study: Airway responsiveness to inhaled methacholine in smokers with mild to moderate airflow limitation. *American Review of Respiratory Diseases* 145:301-310, 1992.

40. Anthonisen, N.R.; Connell, J.E.; Kiley, J.P.; et al. Effects of smoking intervention and the use of an inhaled anticholinergic bronchodilator on the rate of decline of FEV1: The Lung Health Study. *Journal of the American Medical Association* 272:1497-1505, 1994.

41. Anonymous. *Wake Up America: A National Sleep Alert, Report of the National Commission on Sleep Disorders Research to the U.S. Congress and Department of Health and Human Services.* Bethesda, MD: National Institute on Aging, 1994.

42. Redline, S., and Strohl, K.P. Recognition and consequences of obstructed sleep apnea hypopnea syndrome. *Clinical Chest Medicine* 19:1-19, 1998.

43. Young, T.; Blustein, J.; Finn, L.; and Palta, M. Sleep-disordered breathing and motor vehicle accidents in a population-based sample of employed adults. *Sleep* 20:608-613, 1997.

44. Tischler, P.V.; Redline, S.; Ferrette, V.; Hans, M.G.; et al. The association of sudden unexpected infant death with obstructive sleep apnea. *American Journal of Respiratory and Critical Care Medicine* 153:1857-1863, 1996.

45. Redline, S. Epidemiology of sleep disordered breathing. *Seminars in Respiratory and Critical Care Medicine* 19(2):113-122.

46. Fletcher, E.C.; DeBehunke, R.D.; Lovoi, M.S.; and Gorin, A.B. Undiagnosed sleep apnea in patients with essential hypertension. *Annals of Internal Medicine* 103:190-195, 1995.

47. Guilleminault, H.C.; Tilkian, A.; and Dement, W.C. The sleep apnea syndromes. *Annual Review of Medicine* 27:465-484, 1976.

48. Carlson, J.T.; Hedner, J.A.; Ejnell, H.; and Peterson, L.E. High prevalence of hypertension in sleep apnea patients independent of obesity. *American Journal of Respiratory and Critical Care Medicine* 150:72-77, 1994.

49. Rosen, R.C.; Rosekind, M.; Rosevear, C.; Cole, W.E.; and Dement, W.C. Physician education in sleep and sleep disorders: A national survey of U.S. medical schools. *Sleep* 16:249-254, 1993

25

Sexually Transmitted Diseases

Lead Agency: Centers for Disease Control and Prevention

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Goal

Promote responsible sexual behaviors, strengthen community capacity, and increase access to quality services to prevent sexually transmitted diseases (STDs) and their complications.

Overview

Sexually transmitted diseases (STDs) refer to the more than 25 infectious organisms transmitted primarily through sexual activity. STDs are one of many related factors that affect the broad continuum of reproductive health agreed on in 1994 by 180 governments at the International Conference on Population and Development (ICPD). At ICPD, all governments were challenged to strengthen their STD programs.[1] STD prevention as an essential primary care strategy is integral to improving reproductive health.

Despite the burdens, costs, complications, and preventable nature of STDs, they remain a significant public health problem, largely unrecognized by the American public, policymakers, and public health and health care professionals. STDs cause many harmful, often irreversible, and costly clinical complications, such as reproductive health problems, fetal and perinatal health problems, and cancer. In addition, studies of the worldwide human immunodeficiency virus (HIV) pandemic link other STDs to a causal chain of events in the sexual transmission of HIV infection.[2]

Issues

A 1997 Institute of Medicine (IOM) report characterized STDs as "hidden epidemics of tremendous health and economic consequence in the United States" and indicated that "STDs represent a growing threat to the Nation's health and that national action is urgently needed."[3] IOM's principal conclusion was that the United States needs to establish a much more effective national system for STD prevention, which takes into account the complex interaction between biological and social factors that sustain STD transmission in populations; focuses on preventing the disproportionate effect that STDs have on some population groups; applies proven, cost-effective behavioral and biomedical interventions; and recognizes that education, mass communication media, financing, and health care infrastructure policies must foster change in personal behaviors and in health care services.[3]

Biological factors. STDs are behavior-linked diseases that result from unprotected sex.[3] Several biological factors contribute to their rapid spread.

Asymptomatic nature of STDs. The majority of STDs either do not produce any symptoms or signs, or they produce symptoms so mild that they often are disregarded, resulting in a low index of suspicion by infected persons who should, but often do not, seek medical care. For example, as many as 85 percent of women and up to 50 percent of men with chlamydia have no symptoms.[4, 5, 6, 7] A person infected with HIV may be asymptomatic and may transmit the disease to another person. That person may, in turn, be infected for years but remain unaware until symptoms manifest themselves.

Lag time between infection and complications. Often, a long interval—sometimes years—occurs between acquiring a sexually transmitted infection and recognizing a clinically significant health problem. Examples are cervical cancer caused by human papillomavirus (HPV), liver cancer caused by hepatitis B virus infection,[8] and infertility and ectopic pregnancy resulting from unrecognized or undiagnosed chlamydia or gonorrhea.[9] The original infection often is asymptomatic, and, as a result, people frequently do not perceive a connection between the original sexually acquired infection and the resulting health problem.

Gender and age. Women are at higher risk than men for most STDs, and young women are more susceptible to certain STDs than are older women. The higher risk is partly because the cervix of adolescent females is covered with cells that are especially susceptible to STDs, such as chlamydia.[10]

Social and behavioral factors. The spread of STDs, especially in certain vulnerable population groups, is directly affected by social and behavioral factors. Social and cultural factors may cause serious obstacles to STD prevention by adversely influencing social norms regarding sex and sexuality.

Poverty and marginalization. STDs disproportionately affect disenfranchised persons and persons who are in social networks in which high-risk sexual behavior is common and either access to care or health-seeking behavior is compromised. Some disproportionately affected groups include sex workers (people who exchange sex for money, drugs, or other goods), adolescents, persons in detention, and migrant workers.[3] Without publicly supported STD services, many people in these categories would lack access to STD care.

Substance abuse, sex work, and STDs are closely connected, and substance abuse and sex work frequently are causes for arrest and detention. Studies show that comprehensive screening of incarcerated populations can be done successfully and safely within the criminal justice system.[11, 12, 13] Discussed below are several connected themes relevant to any discussion of poverty and marginalization issues.

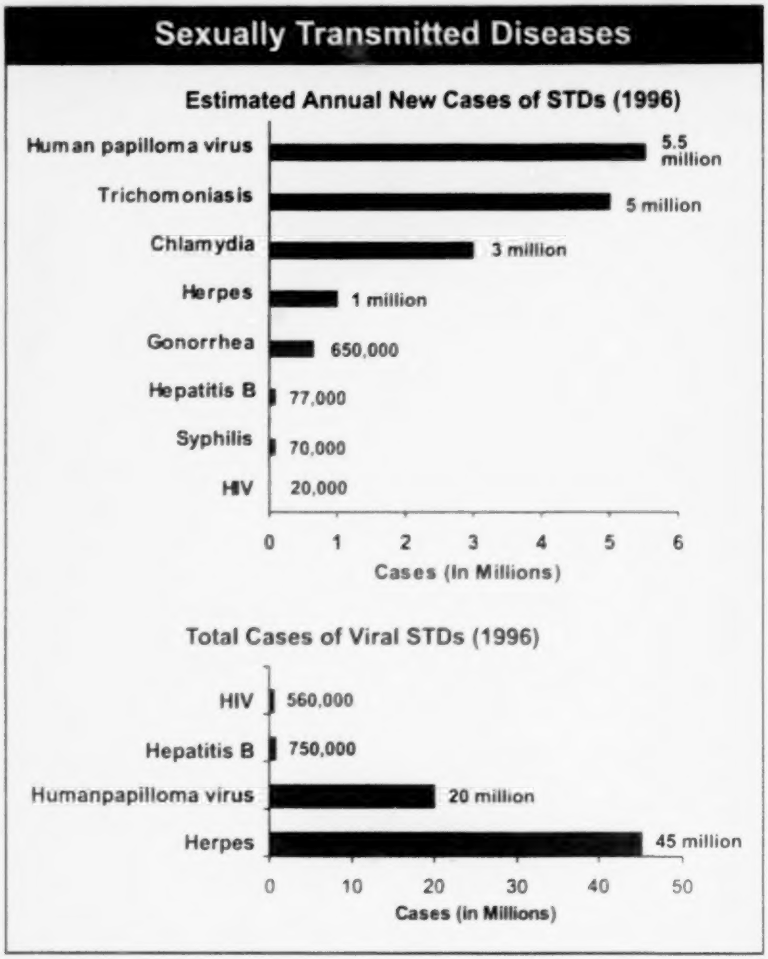
Access to health care. Access to high-quality health care is essential for early detection, treatment, and behavior-change counseling for STDs. Often, groups with the highest rates of STDs are the same groups in which access to health services is most limited. This limitation relates to (1) lacking access to publicly supported

STD clinics (present in only 50 percent of U.S. public health jurisdictions),[14] (2) having no health care coverage, (3) having coverage that imposes a copayment or deductible, or (4) having coverage that excludes the basic preventive health services that help avert STDs or their complications.

Substance abuse. Many studies document the association of substance abuse, especially the abuse of alcohol and drugs, with STDs.[15] At the population level, the introduction of new illicit substances into communities often can drastically alter sexual behavior in high-risk sexual networks, leading to the epidemic spread of STDs.[16] Behavioral factors that can increase STD transmission in a community include increases in the exchange of sex for drugs, increases in the number of anonymous sex partners, decreases in motivation to use barrier protection, and decreases in attempts to seek medical treatment. The nationwide syphilis epidemic of the late 1980s, for example, was fueled by increased crack cocaine use.[17] Other substances, including alcohol, may affect an individual's cognitive and negotiating skills before and during sex, lowering the likelihood that protection against STD transmission and pregnancy will be used.

Sexual coercion. Analysis of adolescent female sexual activity reveals the frequency of coercive behaviors and brings to light that not all young women enter sexual relationships as willing partners.[18] In fact, sexual coercion is a major problem for significant numbers of young women in the United States. In 1995, 16.1 percent of females whose first sexual intercourse took place when they were aged 15 years or under reported that it was not voluntary.[19] This aspect of adolescent sexual behavior demands increased national and local attention, both for social justice and for health reasons. Sexual violence against women contributes both directly and indirectly to STD transmission. Directly, women experiencing sexual violence are less able to protect themselves from STDs or pregnancy. Indirectly, research demonstrates that women with a history of involuntary sexual intercourse are more likely to have voluntary intercourse at earlier ages—a known risk factor for STDs—than women who are not sexually abused.[20]

Sexuality and secrecy. Perhaps the most important social factor contributing to the spread of STDs in the United States and the factor that most significantly separates the United States from those industrialized countries with low rates of STDs is the stigma associated with STDs and Americans' general discomfort with discussing intimate aspects of life, especially those related to sex.[21] Sex and sexuality pervade many aspects of the Nation's culture, and people in the United States are fascinated with sexual matters. Paradoxically, while sexuality is considered a normal aspect of human functioning, Americans nevertheless are secretive and private about their sexual behavior. Talking openly and comfortably about sex and sexuality is difficult even in the most intimate relationships. One survey showed that, for married couples, about one-fourth of women and one-fifth of men had no knowledge of their partner's sexual history.[22] In its study, IOM stated, "The secrecy surrounding sexuality impedes sexuality education programs for adolescents, open discussion between parents and their children and between sex partners, balanced messages from mass media, education and counseling activities of health care professionals, and community activism regarding STDs."[23]



Source: American Social Health Association. *Sexually Transmitted Diseases in America: How Many Cases and at What Cost?* Menlo Park, CA: Kaiser Family Foundation, 1998.

Changing sexual behaviors and sexual norms will be an important part of any long-term strategy to develop a more effective national system of STD prevention in the United States. A new sexual openness needs to become the norm in America to ensure that all sexual relationships are consensual, nonexploitive, and honest and to protect against disease and unintended pregnancy. This openness would allow (1) parents to talk frankly and comfortably with their children, and teachers and counselors with their students, about responsible behavior and avoiding risks (for example, abstaining from intercourse, delaying initiation of intercourse, reducing the number of sex partners, and increasing the use of effective barrier contraception); (2) sex partners to talk openly about safe behaviors; and (3) health care providers to talk comfortably and knowledgeably with patients about sexuality and sexual risk, to counsel them about risk avoidance, and to screen them regularly for STDs when indicated.[24]

The entertainment industry, particularly television, has noticed Americans' interest in sexual themes. While Americans are bombarded by sexual messages and images, very little informed, high-quality STD prevention advice or discussion exists regarding contraception, sexuality, or the risks of early, unprotected sexual behavior. Popular television programs depict as many as 25 instances of sexual behaviors for every 1 instance of protected behavior or discussion about STDs or pregnancy prevention.[25] Media companies can play an important part in reshaping sexual behaviors and norms in America in the next decade.

Trends

STDs are common, costly, and preventable. Worldwide, an estimated 333 million curable STDs occur annually.[26] In 1995, STDs were the most common reportable diseases in the United States.[27] They accounted for 87 percent of the top 10 infections most frequently reported to the Centers for Disease Control and Prevention (CDC) from State health departments. Of the top 10 infections, 5 were STDs (chlamydia, gonorrhea, AIDS, syphilis, and hepatitis B). Each year an estimated 15 million new STD infections occur in the United States, and nearly 4 million teenagers are infected with an STD.[28] The direct and indirect costs of the major STDs and their complications, including sexually transmitted HIV infection, are conservatively estimated at $17 billion annually.[3]

Despite recent progress toward controlling some STDs, when compared to other industrialized nations, the United States has failed to go far enough or fast enough in its national attempt to contain acute STDs and STD-related complications.[3] STD rates in this Nation exceed those in all other countries of the industrialized world (including the countries of western and northern Europe, Canada, Japan, and Australia). Through a sustained, collaborative, multifaceted approach, other countries have reduced significantly the burden of STDs on their citizens, an accomplishment the United States also should strive to achieve.

Disparities

All racial, cultural, economic, and religious groups are affected by STDs. People in all communities and sexual networks are at risk for STDs. Nevertheless, some population groups are disproportionately affected by STDs and their complications.

Gender disparities. Women suffer more frequent and more serious STD complications than men. Among the most serious STD complications are pelvic inflammatory disease, ectopic pregnancy, infertility, and chronic pelvic pain.[29] Women are biologically more susceptible to infection when exposed to a sexually transmitted agent. Often, STDs are transmitted more easily from a man to a woman.[30] Acute STDs (and even some complications) often are very mild or are completely asymptomatic in women. STDs are more difficult to diagnose in women due to the physiology and anatomy of the female reproductive tract. This combination of increased susceptibility and "silent" infection frequently can result in women being unaware of an STD, which results in delayed diagnosis and treatment.

STDs in pregnant women can cause serious health problems or death to the fetus or newborn.[31] Sexually transmitted organisms in the mother can cross the placenta to the fetus or newborn, resulting in congenital infection, or these organisms can reach the newborn during delivery, resulting in perinatal infections. Regardless of the route of infection, these organisms can permanently damage the brain, spinal cord, eyes, auditory nerves, or immune system. Even when the organisms do not reach the fetus or newborn directly, they can significantly complicate the pregnancy by causing spontaneous abortion, stillbirth, premature rupture of the membranes, or preterm delivery.[32] For example, women with bacterial vaginosis are 40 percent more likely to deliver a preterm, low birth weight infant than are mothers without this condition.[33, 34]

Age disparities. For a variety of behavioral, social, and biological reasons, STDs also disproportionately affect adolescents and young adults.[35] In 1997, females aged 15 to 19 years had the highest reported rates of both chlamydia and gonorrhea among women; males aged 20 to 24 years had the highest reported rates of both chlamydia and gonorrhea among men.[36] The herpes infection rate of white youth aged 12 to 19 years increased nearly fivefold from the period 1976-80 to the period 1988-94.[37] Indeed, because not all teenagers are sexually active, the actual rate of STDs in teens is probably higher than the observed rates suggest.[10] There are several contributing factors:

- Sexually active teenagers are at risk for STDs. In 1995, 50 percent of females aged 15 to 19 years interviewed for the National Survey of Family Growth indicated that they had had sexual intercourse.[10] In the same year, 54 percent of adolescent males in high school reported having had sexual intercourse, including 49 percent of white males, 62 percent of Hispanic males, and 81 percent of African American males.[38]

- Teenagers are increasingly likely to have more sex partners at earlier ages. Compounding this factor is the fact that these partners are active in sexual networks already highly infected with untreated STDs.[36] In 1971, 39 percent of sexually active adolescent females aged 15 to 19 years had more than one sex partner; in 1988 the percentage had increased to 62 percent.[39]

- Sexually active teenagers often are reluctant to obtain STD services, or they may face serious obstacles when trying to obtain them. In addition, health care providers often are uncomfortable discussing sexuality and risk reduction with their patients, thus missing opportunities to counsel and screen young people for STDs.[3]

Racial and ethnic disparities. Certain racial and ethnic groups (mainly African American and Hispanic populations) have high rates of STDs, compared with rates for whites. Race and ethnicity in the United States are risk markers that correlate with other fundamental determinants of health status, such as poverty, limited or no access to quality health care, fewer attempts to get medical treatment, illicit drug use, and living in communities with a high number of cases of STDs. National surveillance data may overrepresent STDs in racial and ethnic groups that are more likely to receive STD services from public-sector STD clinics where timely and complete illness reporting is generally the rule. However, studies using random sampling techniques document higher rates of STDs in marginalized populations, particularly African Americans as compared with whites.[37] Surveillance data from 1997 show:[38]

- Although chlamydia is a widely distributed STD in population groups, it occurs more frequently in certain racial and ethnic groups.

- African Americans (non-Hispanic blacks) accounted for about 77 percent of the total number of reported cases of gonorrhea—31 times the rate in whites (non-Hispanic whites). African American rates were on average about 24 times higher than those of white adolescents aged 15 to 19 years; the rate for African Americans aged 20 to 24 years was almost 28 times greater than that in whites. Gonorrhea rates in Hispanic persons were nearly three times the rate in whites.

- The most recent syphilis epidemic occurred largely in heterosexual minority populations. Since 1990, rates of primary and secondary (P&S) syphilis have declined in all racial and ethnic groups except American Indians or Alaska Natives. However, rates for African Americans and Hispanics continue to be higher than those for whites. In 1997, African Americans accounted for about 82 percent of all reported cases of P&S syphilis.

- In 1997, the rate of congenital syphilis was 113.5 per 100,000 live births in African Americans and 34.6 per 100,000 live births in Hispanics, compared with 3.3 per 100,000 live births in whites.

Finally, young heterosexual women, especially minority women, are increasingly acquiring HIV infection and developing AIDS. In 1998, 41 percent of reported AIDS cases in persons aged 13 to 24 years occurred in young women, and more than four of every five AIDS cases reported in women occurred in minority women (mostly African American or Hispanic).[40] The U.S. spread of HIV infection through heterosexual transmission closely parallels other STD epidemics.[2]

Compelling worldwide evidence indicates that the presence of other STDs increases the likelihood of both transmitting and acquiring HIV infection.[2] Prospective epidemiological studies from four continents, including North America, have repeatedly demonstrated that when other STDs are present, HIV transmission is at least two to five times higher than when other STDs are not present. Biological studies demonstrate that when other STDs are present, an individual's susceptibility to HIV infection is increased, and the likelihood of a dually infected person (having HIV infection and another STD) infecting other people with HIV is increased. Conversely, effective STD treatment can slow the spread of HIV at the individual and community levels.

Opportunities

Prevention opportunities arise from an understanding of STD transmission dynamics. The rate of STD infection in a population is determined by the interaction of three principal factors:[41, 42]

- The rate at which uninfected individuals have sex with infected persons (rate of sex partner exchange or exposure).
- The probability that a susceptible exposed person actually will acquire the infection (transmission).
- The time period during which an infected person remains infectious and able to spread disease to others (duration).

Effective STD prevention requires effective population-level and individual-level interventions that can alter the natural course of these factors. IOM advised in its report, "Use of available information and interventions could have a rapid and dramatic impact on the incidence and prevalence of STDs in the United States. Many effective and efficient behavioral and biomedical interventions are available."[3]

Behavioral interventions can be brought to bear on exposure, transmission, and duration factors. They help persons abstain from sexual intercourse, delay initiation of intercourse, reduce the number of sex partners, and increase the use of effective physical barriers, such as condoms, or emerging chemical barriers, such as microbicides. Further attention must be given to helping parents become better at imparting STD information. Currently, a small percentage of adolescents receive STD prevention information from parents.[43] Schools are the main source of STD information for most teenagers,[43] indicating that school-based interventions can play a significant role in informing young people about STD exposure and transmission issues and in motivating them to modify their behaviors.[43] (See Focus Area 7. Educational and Community-Based Programs.) Both school-based health information and school-based health service programs are potentially beneficial to young persons.[44]

Mass media campaigns have been effective in bringing about significant changes in awareness, attitude, knowledge, and behaviors for other health problems, such as smoking.[45] National communication efforts are needed to help overcome widespread misinformation and lack of awareness about STDs.

Biomedical interventions can affect aspects of transmission and duration factors. Vaccines minimize the probability of infection, disease, or both, after exposure (transmission). While vaccines for some STDs are in various stages of development, the only effective and widely available STD vaccine is for hepatitis B.[46, 47] Unfortunately, hepatitis B vaccine coverage remains minimal, especially in high-risk groups, mainly due to a lack of awareness on the part of health care providers; limited opportunities to reach high-risk youth in traditional health care settings; and limited financial support for wide-scale implementation of this effective intervention. (See Focus Area 14. Immunization and Infectious Diseases.)

Correct and consistent condom use decreases STD transmission.[48] While condom use has been on the rise in the United States over the past few decades,[49] women who use the most effective forms of contraception (sterilization and hormonal contraception) are less likely to use condoms for STD prevention.[50, 51, 52] IOM stated in its report, "Because no single method of preventing STDs or pregnancy confers the maximum level of protection against both conditions, use of dual protection—that is, a condom and another effective contraceptive for pregnancy—is especially important. Not clear, however, is how well the public understands the need for dual protection against STDs and pregnancy."[3] Dual methods could prevent unwanted pregnancy and STDs.[53] Yet most sexually active young people do not employ this strategy.[54]

Identifying and treating partners of persons with curable STDs to break the chain of transmission in a sexual network always have been integral to organized control programs.[55] Early antimicrobial prophylaxis of the exposed partner reduces the likelihood of transmission and thwarts infection. With partner treatment, the initially infected person benefits from a reduced risk of reinfection from an untreated partner, and the partner avoids acute infection and its potential complications. Future sex partners are protected by treating partners; thus, this treatment strategy also benefits the community.

Active partner notification and partner treatment generally have been the responsibility of personnel in public STD clinics. New approaches for getting more partners treated are being assessed both in traditional and nontraditional STD treatment settings. One approach actively involves initially infected patients in the process of referring their partners for evaluation and treatment.[56] Another approach uses new techniques to assess sexual networks in outbreak situations in order to identify infected patients and their partners more quickly.[57] Because most STD care in the United States is delivered in the private sector, private health care providers, managed-care organizations, and health departments need to work together to overcome barriers to rapid and effective treatment of the nonplan sex partners of health plan members.

Screening and treatment of STDs affect both transmission and duration factors. For curable STDs, screening and treatment can be cost-effective, or even cost-saving, in altering the period during which infected persons can infect others.

Screening for STDs clearly meets the criteria for an effective preventive intervention.[58] For STDs that frequently are asymptomatic, screening and treatment benefit those who are likely to suffer severe complications (especially women) if infections are not detected and treated early.[59] For example, in a randomized controlled trial conducted in a large managed-care organization, chlamydia screening reduced new cases of subsequent pelvic inflammatory disease (PID) in a screened group by 56 percent.[60] Selective screening for chlamydia in the Pacific Northwest reduced the burden of disease in the screened population by 60 percent in 5 years.[61]

When combined with a new generation of sensitive and rapid diagnostic tests, some of which can be performed on a urine specimen, STD screening of specific high-risk populations in nontraditional settings appears to be a promising control strategy that expands access to underserved groups.[62] The success of screening programs will depend on the availability of funds, the willingness of communities and institutions to support them, and the availability of well-trained health care providers and of well-equipped and accessible laboratories.

Interim Progress Toward Year 2000 Objectives

Significant progress was made during the 1990s toward reducing the burden of the common bacterial STDs in the United States, such as gonorrhea, syphilis, and congenital syphilis—diseases for which national control programs have existed for the longest period. Encouraging data are emerging from a new and expanding chlamydia prevention program, suggesting that chlamydia screening is reducing disease burden and preventing complications. Nevertheless, STD complications, such as PID, continue to take a heavy toll on women's health and increase health care costs.

Because so many people are already infected, and millions more are infected annually, viral STDs continue to present challenges for prevention and control. One of the most serious health problems associated with STDs is sexually acquired HIV infection that is facilitated by the presence of an inflammatory or ulcerative STD in one or both sex partners. In 1998, females accounted for 23 percent of all AIDS cases in the United States, with African American and Hispanic females incurring a disproportionate share (similar to other STDs) of heterosexually transmitted HIV infection.[40] A nationally representative study showed that genital herpes infection is very common in the United States.[37] Nationwide, 45 million persons aged 12 years and older, or 1 out of 5 of the total adolescent and adult population, are infected with herpes simplex virus type 2. As many as 20 million persons in the United States already are infected with strains of the human papillomavirus, and an estimated 5.5 million new infections occur annually.[28]

Of the 17 STD-related Healthy People 2000 objectives, 10 either met or moved toward their targets. The Nation is making strides in efforts to reduce the occurrence of STDs, educate people about condom use, increase clinic services for HIV and other sexually transmitted diseases, and encourage abstinence from sexual intercourse among adolescents. Routine counseling by clinicians to prevent STDs has slipped away from its target. Two objectives have held steady: adolescents engaging in sexual intercourse and annual first-time consultations about genital herpes and warts. Another four could not be assessed.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Sexually Transmitted Diseases

Goal: Promote responsible sexual behaviors, strengthen community capacity, and increase access to quality services to prevent sexually transmitted diseases (STDs) and their complications.

Number	Objective
Bacterial STD Illness and Disability	
25-1	Chlamydia
25-2	Gonorrhea
25-3	Primary and secondary syphilis
Viral STD Illness and Disability	
25-4	Genital herpes
25-5	Human papillomavirus infection
STD Complications Affecting Females	
25-6	Pelvic inflammatory disease (PID)
25-7	Fertility problems
25-8	Heterosexually transmitted HIV infection in women
STD Complications Affecting the Fetus and Newborn	
25-9	Congenital syphilis
25-10	Neonatal STDs
Personal Behaviors	
25-11	Responsible adolescent sexual behavior
25-12	Responsible sexual behavior messages on television
Community Protection Infrastructure	
25-13	Hepatitis B vaccine services in STD clinics
25-14	Screening in youth detention facilities and jails
25-15	Contracts to treat nonplan partners of STD patients
Personal Health Services	
25-16	Annual screening for genital chlamydia
25-17	Screening of pregnant women
25-18	Compliance with recognized STD treatment standards
24-19	Provider referral services for sex partners

Bacterial STD Illness and Disability

25-1. Reduce the proportion of adolescents and young adults with *Chlamydia trachomatis* infections.

Target and baseline:

Objective	Reduction in *Chlamydia trachomatis* infections	1997 Baseline	2010 Target
		Percent	
25-1a.	Females aged 15 to 24 years attending family planning clinics	5.0	3.0
25-1b.	Females aged 15 to 24 years attending STD clinics	12.2	3.0
25-1c.	Males aged 15 to 24 years attending STD clinics	15.7	3.0

Target setting method: Better than the best.

Data source: STD Surveillance System, CDC, NCHSTP.

Persons Aged 15 to 24 Years Attending Clinics, 1997	Infected With Chlamydia		
	25-1a. Females (Family Planning Clinics)	25-1b. Females (STD Clinics)	25-1c. Males (STD Clinics)
		Percent	
TOTAL	5.0	12.2	15.7
Race and ethnicity			
American Indian or Alaska Native	6.3	13.1	12.6
Asian or Pacific Islander	4.7	12.0	16.6
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC

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Persons Aged 15 to 24 Years Attending Clinics, 1997	Infected With Chlamydia		
	25-1a. Females (Family Planning Clinics)	25-1b. Females (STD Clinics)	25-1c. Males (STD Clinics)
	Percent		
Hispanic or Latino	5.2	14.0	18.5
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	11.1	15.2	18.1
White	3.1	9.2	11.5
Family income level			
Poor	DNC	DNC	DNC
Near poor	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

25-2. Reduce gonorrhea.

Target: 19 new cases per 100,000 population.

Baseline: 123 new cases of gonorrhea per 100,000 population in 1997.

Target setting method: Better than the best.

Data source: STD Surveillance System, CDC, NCHSTP.

Total Population, 1997	New Gonorrhea Cases		
	Both Genders	Females*	Males*
	Rate per 100,000		
TOTAL	123	119	125
Race and ethnicity			
American Indian or Alaska Native	100	131	67
Asian or Pacific Islander	20	21	18
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC

Total Population, 1997	New Gonorrhea Cases Both Genders	Females*	Males*
	Rate per 100,000		
Hispanic or Latino	69	72	67
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	808	714	912
White	26	32	20
Age			
15 to 24 years	512	617	414
25 to 34 years	198	161	235
35 to 44 years	71	40	101
Family income level			
Poor	DNC	DNC	DNC
Near poor	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

25-3. Eliminate sustained domestic transmission of primary and secondary syphilis.

Target: 0.2 case per 100,000 population.

Baseline: 3.2 cases per 100,000 population in 1997.

Target setting method: Better than the best and consistent with the National Plan to Eliminate Syphilis from the United States, CDC, 1999.

Data source: STD Surveillance System, CDC, NCHSTP.

Total Population, 1997	Primary and Secondary Syphilis Cases Both Genders	Females*	Males*
	Rate per 100,000		
TOTAL	3.2	2.9	3.6
Race and ethnicity			
American Indian or Alaska Native	2.0	2.3	1.8
Asian or Pacific Islander	0.3	0.4	0.3
Asian	DNC	DNC	DNC

Total Population, 1997	Primary and Secondary Syphilis Cases		
	Both Genders	Females*	Males*
	Rate per 100,000		
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	1.6	1.0	2.1
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	22.0	19.3	25.0
White	0.5	0.5	0.6
Family income level			
Poor	DNC	DNC	DNC
Near poor	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

The United States has a unique opportunity to eliminate syphilis within its borders. Syphilis is easy to detect and cure, given adequate access to and use of care. Nationally, it is at the lowest rate ever recorded and is confined to a very limited number of geographic areas. The last epidemic peaked in 1990, with the highest syphilis rate in 40 years. By 1997, the number of cases had declined by 84 percent.[62] In addition, where syphilis does persist in the United States, it disproportionately affects African Americans living in poverty. Although the black:white ratio for reported syphilis has decreased since the early 1990s, the 1997 primary and secondary syphilis rate for non-Hispanic blacks was still 44 times greater than that for non-Hispanic whites.[62] In 1997, of the 1,034 reported congenital syphilis cases with known race or ethnicity of the mother, non-Hispanic blacks and Hispanics accounted for 88 percent of these reported cases, while accounting for only 23 percent of the female population and 33 percent of all births.[62] The persistence of high rates of syphilis in the United States is a sentinel event identifying communities in which there is a fundamental failure of basic public health capacity to control infectious diseases and ensure reproductive health.

Elimination of syphilis would have far-reaching public health implications because it would remove two devastating consequences of the disease—increased likelihood of HIV transmission and compromised ability to have healthy babies due to spontaneous abortions, stillbirths, and multi-system disorders caused by congenital syphilis acquired from mothers with syphilis. Eliminating syphilis in the United States would be a landmark achievement because it would remove these direct health burdens and would significantly decrease one of this Nation's most glaring racial disparities in health.

While many other endemic diseases, such as polio, measles, and smallpox, have been eliminated through widespread use of vaccines, the strategies for syphilis elimination differ from these efforts largely because there currently is no vaccine. Five strategies are critical for eliminating syphilis from the United States. Two strategies—strengthened community involvement and partnerships and rapid outbreak response—will be new in many parts of the United States. The three remaining strategies—enhanced surveillance, expanded clinical and laboratory services, and enhanced health promotion—have been used for syphilis control and will be intensified and expanded for syphilis elimination.

Viral STD Illness and Disability

25-4. Reduce the proportion of adults with genital herpes infection.

Target: 14 percent.

Baseline: 17 percent of adults aged 20 to 29 years had genital herpes infection in 1988-94 (as measured by herpes simplex virus type 2 [HSV-2] antibody).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 20 to 29 Years, 1988-94	**Infected With Genital Herpes** Percent
TOTAL	17
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	34
White	15
Hispanic or Latino	DSU
Mexican American	15
Not Hispanic or Latino	DNA

Adults Aged 20 to 29 Years, 1988-94	Infected With Genital Herpes Percent
Black or African American	33
White	15
Gender	
Female (all ages)	26
Male (all ages)	18
Age	
12 to 19 years	6
20 to 29 years	17
30 to 39 years	28
40 to 49 years	27
Family income level	
Poor	28
Near poor	14
Middle/high income	15

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

25-5. (Developmental) Reduce the proportion of persons with human papillomavirus (HPV) infection.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Reducing the number of new HPV cases can help to minimize the overall number of cases of high-risk subtypes associated with cervical cancer in females aged 15 to 44 years. Over the past 15 years, molecular, biochemical, and epidemiologic data have firmly established the central role of several types of HPV (types 16, 18, 31, and 45) in the pathogenesis of cervical cancer.[63]

STD Complications Affecting Females

25-6. Reduce the proportion of females who have ever required treatment for pelvic inflammatory disease (PID).

Target: 5 percent.

Baseline: 8 percent of females aged 15 to 44 years required treatment for PID in 1995.

Target setting method: Better than the best.

Data source: National Survey of Family Growth (NSFG), CDC, NCHS.

Females Aged 15 to 44 Years, 1995	**Treated for PID** Percent
TOTAL	8
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	11
White	7
Hispanic or Latino	8
Not Hispanic or Latino	8
Black or African American	11
White	7
Family income level (aged 22 to 44 years)	
Poor	12
Near poor	11
Middle/high income	8
Education level (aged 22 to 44 years)	
Less than high school	14
High school graduate	9
At least some college	7

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Pelvic inflammatory disease (PID) is among the most serious threats to female reproductive capability. PID is caused most frequently by chlamydial infections and gonorrhea that ascend past the cervix into the upper reproductive tract.[65] More than 1 million women have an episode of PID annually.[66, 67] PID often results in scarring and either complete or partial blockage of the fallopian tubes. As a result, as many as one-quarter of women with acute PID experience serious long-term sequelae, most often an ectopic pregnancy or tubal factor infertility. Women who have had PID are 6 to 10 times more likely to have an ectopic pregnancy compared with women who have not had PID.[9] In 1992, approximately 9 percent of all pregnancy-related deaths were caused by ectopic pregnancy.[68]

25-7. Reduce the proportion of childless females with fertility problems who have had a sexually transmitted disease or who have required treatment for pelvic inflammatory disease (PID).

Target: 15 percent of childless females.

Baseline: 27 percent of childless females aged 15 to 44 years with fertility problems had a history of STDs or PID treatment in 1995.

Target setting method: 44 percent improvement.

Data source: National Survey of Family Growth (NSFG), CDC, NCHS.

Childless Females Aged 15 to 44 Years With Fertility Problems, 1995	**STD History or PID Treatment** Percent
TOTAL	27
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	33
White	27
Hispanic or Latino	27
Not Hispanic or Latino	27
Black or African American	32
White	27
Age	
15 to 24 years	23
25 to 34 years	26
35 to 44 years	31
Education level (aged 22 to 44 years)	
Less than high school	30
High school graduate	27
At least some college	28

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

In 1995, there were approximately 24.2 million women aged 15 to 44 years who had not given birth to a child and had not had a sterilizing operation. Most of them

(21.2 million) were presumed to be able to have a child. It may be that these women were not aware of fertility problems (see Terminology) because they had not yet tested their fertility potential. This is supported by the fact that most of these 21.2 million childless women were using contraception in 1995. While some fraction of them may remain voluntarily childless and never choose to test their fertility, most are likely to pursue childbearing at some point in the future. Approximately 2.3 million of these "untested" women in 1995 had a history of STDs or PID treatment, increasing the likelihood that some of them will experience a fertility problem in the future. If the social stigma associated with STDs resulted in any underreporting of STDs in this self-report survey, the 2.3 million women at risk for future fertility problems may be a low estimate.

At the time of the NSFG in 1995, nearly 3 million of the 24.2 million childless women had a fertility problem. A subset of this group, approximately 800,000 women, had a history of STDs or PID treatment. This group comprised 27 percent of the women with known fertility problems. This may be a low estimate of the contribution made by previous STDs or PID to the fertility problems among childless women. Because bacterial STDs and PID may be asymptomatic when present and because diagnosing tubal factor infertility caused by PID is both difficult and expensive, many women with fertility problems may not be aware of having had an STD or PID in the past. Evidence has shown that reducing the burden of bacterial STDs in reproductive age women can dramatically reduce the amount of PID[60] and through this mechanism could reduce fertility problems.

25-8. (Developmental) Reduce HIV infections in adolescent and young adult females aged 13 to 24 years that are associated with heterosexual contact.

Potential data source: HIV/AIDS Surveillance System, CDC, NCHSTP.

STD Complications Affecting the Fetus and Newborn

25-9. Reduce congenital syphilis.

Target: 1 new case per 100,000 live births.

Baseline: 27 new cases of congenital syphilis per 100,000 live births in 1997.

Target setting method: Better than the best and consistent with the National Plan to Eliminate Syphilis from the United States, CDC, 1998.

Data sources: STD Surveillance System, CDC, NCHSTP; National Vital Statistics System (NVSS), CDC, NCHS.

Live Births, 1997	New Congenital Syphilis Cases Rate per 100,000
TOTAL	27
Mother's race and ethnicity	
American Indian or Alaska Native	11
Asian or Pacific Islander	8
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNC
White	DNC
Hispanic or Latino	34
Not Hispanic or Latino	DNC
Black or African American	123
White	4
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

25-10. (Developmental) Reduce neonatal consequences from maternal sexually transmitted diseases, including chlamydial pneumonia, gonococcal and chlamydial *ophthalmia neonatorum*, laryngeal papillomatosis (from human papillomavirus infection), neonatal herpes, and preterm birth and low birth weight associated with bacterial vaginosis.

Potential data source: STD Surveillance System, CDC, NCHSTP.

Personal Behaviors

25-11. Increase the proportion of adolescents who abstain from sexual intercourse or use condoms if currently sexually active.

Target: 95 percent.

Baseline: 85 percent of adolescents in grades 9 through 12 abstained from sexual intercourse or used condoms in 1997 (52 percent had never had intercourse; 13 percent had intercourse but not in the past 3 months; and 20 percent currently were sexually active and used a condom at last intercourse).

Target setting method: 12 percent improvement.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP

Students in Grades 9 Through 12, 1997	25-11. Abstained From Sexual Intercourse or Used Condom [Column a = b + c + d]	NOT Currently Sexually Active		Currently Sexually Active	
		Never Had Intercourse* [Column b]	No Intercourse in Past 3 Months* [Column c]	Used Condom at Last Intercourse* [Column d]	Did NOT Use Condom at Last Intercourse* [Column e]
	Percent				
TOTAL	85	52	13	20	15
Race and ethnicity					
American Indian or Alaska Native	DSU	DSU	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU	DSU	DSU
Asian	DNC	DNC	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC	DNC	DNC
White	DNC	DNC	DNC	DNC	DNC
Hispanic or Latino	82	48	17	17	18
Not Hispanic or Latino					
Black or African American	80	27	19	34	20
White	86	56	12	18	14
Gender					
Female	82	52	11	19	18
Male	87	51	15	21	13
Grade					
9th	90	62	14	14	10
10th	88	58	13	17	12

Students in Grades 9 Through 12, 1997	25-11. Abstained From Sexual Intercourse or Used Condom [Column a = b + c + d]	NOT Currently Sexually Active		Currently Sexually Active	
		Never Had Intercourse* [Column b]	No Intercourse in Past 3 Months* [Column c]	Used Condom at Last Intercourse* [Column d]	Did NOT Use Condom at Last Intercourse* [Column e]
	Percent				
11th	85	50	12	23	15
12th	78	39	15	24	22
Number of sex partners (past 3 months)					
None	100	79	21	NA	NA
1	57	NA	NA	57	43
2 to 3	57	NA	NA	57	43
4 or more	50	NA	NA	50	50

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable. NA = Not applicable.

*Data for never had intercourse, had intercourse but not in the past 3 months, and currently sexually active and used a condom at last intercourse are displayed to further characterize the issue.

Promoting responsible adolescent sexual behavior targets three protective behaviors that reduce the risk of STDs (including HIV infection) and unintended pregnancy. These behaviors are especially relevant to young people who, as a group, experience a disproportionate share of STDs and unintended pregnancies when they engage in sexual intercourse. The protective behaviors of interest are completely abstaining from sexual intercourse during adolescence (primary abstinence), reverting to abstinence for long periods of time after having had intercourse in the past (secondary abstinence), and at least using condoms (a single method that offers protection against both pregnancy and some STDs) consistently and correctly if regular intercourse is occurring. In 1997, 85 percent of high school youth demonstrated at least one of these behaviors. In contrast, the remaining 15 percent were sexually active and did not use a condom at last intercourse, placing them at high risk for STDs and unwanted pregnancy. Increasing and maintaining the proportion of youth who exhibit the above protective behaviors reduce the risk of HIV infection, other STDs, and unintended pregnancies for adolescents because the proportion of youth who are currently sexually active and do not use condoms will be reduced.

Various societal institutions (such as parents and families, schools, health care providers, post secondary institutions, religious organizations, media, employers, community agencies that serve youth, celebrities, and government agencies) can positively influence the health and behaviors of the Nation's youth. Collaboration among these institutions can (1) help adolescents abstain from sexual intercourse,

(2) help them overcome pressure to become sexually active prematurely, and (3) ensure accessible, confidential community counseling and clinical services for young people who are or have been sexually active.

Abstaining from sexual intercourse offers maximum protection to adolescents who are generally poorly prepared to deal with the physical and psychological consequences of HIV infection, other STDs, and pregnancy. Overall, 52 percent of high school youth fell into this category. Abstaining from sexual intercourse while in high school varied by race and ethnicity, for example, from 56 percent among white youth to 27 percent among African American youth. Abstaining from intercourse decreased as young people progressed through high school, from 62 percent among 9th graders to 39 percent among 12th graders. These data point out that while 62 percent of 9th graders had never had sexual intercourse, at least 38 percent had intercourse during or before 9th grade. Among the 38 percent, 14 percent had not had intercourse in the past 3 months, 14 percent were currently sexually active and used a condom at last intercourse, and the remaining 10 percent were sexually active and did not use a condom at last intercourse. This suggests a need for counseling, support, education, and services for many young people even before high school begins.

Young people who have had sexual intercourse in the past but are not currently sexually active need special attention and services. Overall, 13 percent of high school youth fall into this category. Slightly more males (15 percent) than females (11 percent) fit into this category. More African American youth (19 percent) fit this category than Hispanic (17 percent) or white (12 percent) youth. Even if pregnancy was avoided in the past, the same may not be true for STDs. Some may have acquired viral or bacterial STDs that have not been recognized or treated. Previously sexually active adolescents need to be educated about this, and medical evaluation and counseling are strongly suggested both to identify treatable conditions and to reinforce abstinence messages.

Young people who are currently sexually active also require special attention and services. This applies both to the 20 percent of high school youth who were sexually active and used a condom at last intercourse, and the remaining 15 percent of youth who were currently sexually active and did not use a condom at last intercourse. These data illustrate wide variation in current sexual activity by race/ethnicity. For African American high school youth, 54 percent were sexually active (34 percent were sexually active and used a condom at last intercourse, and 20 percent were sexually active but did not use a condom at last intercourse.) For Hispanic youth, 35 percent were sexually active (17 percent were sexually active and used a condom, and 18 percent were sexually active and did not use a condom). Among white youth, 32 percent were sexually active (18 percent used a condom at last intercourse and 14 percent did not use a condom). Also, fewer sex partners among currently sexually active youth does not equate with a much higher degree of condom use. Regardless of the number of sex partners in a given interval, approximately 1 of every 2 sexually active adolescents did not use a condom at last intercourse. For example, for adolescents who had four or more sex partners in the past 3 months, 50 percent of them would be considered to be at very high risk for STDs (including HIV infection) and possibly pregnancy by not using condoms consistently. Even for youth with one sex partner in the past 3 months, 43 percent did not use condoms consistently. In addition to reinforcing abstinence messages, adult counselors of currently sexually active adolescents must be aware that there is ongoing, very high risk of HIV infection, other STDs, and pregnancy. Responsible and influential adults should help young males and females gain easy access to high quality, confidential, comprehensive reproductive health care in their communities that can help them reduce HIV infection, STD, and pregnancy risk. This is especially true for adolescent females, who bear all the physical consequences of unintended pregnancy and bear disproportionate short- and long-term complications from STDs.

25-12. (Developmental) Increase the number of positive messages related to responsible sexual behavior during weekday and nightly prime-time television programming.

Potential data source: CDC, NCHSTP.

Television messages hold the potential to promote responsible sexual behaviors, such as abstinence, delaying sexual intercourse, or using effective methods to prevent STDs and pregnancy, such as use of condoms and hormonal contraception.

Community Protection Infrastructure

25-13. Increase the proportion of Tribal, State, and local sexually transmitted disease programs that routinely offer hepatitis B vaccines to all STD clients.

Target: 90 percent.

Baseline: 5 percent of State and local STD programs offered hepatitis B vaccines to clients in accordance with CDC guidelines in 1998.[46, 63] Tribal STD program data are developmental.

Target setting method: 85 percent improvement.

Data sources: Survey of STD Programs, National Coalition of STD Directors (NCSD); IHS.

Routine vaccination of infants is expected to produce a highly immune population to eliminate hepatitis B virus transmission in the United States. However, high rates of acute hepatitis B continue to occur in young adult risk groups, particularly persons with a history of another sexually transmitted disease and persons with multiple sex partners. Approximately 50 percent of new infections occur in persons with a sexual risk factor for transmission, and most of these persons have had a missed opportunity to be vaccinated. For example, 42 percent of acute hepatitis

B cases reported in the CDC Sentinel Counties Study of Viral Hepatitis in 1996 had been treated for a sexually transmitted disease in the past.

25-14. (Developmental) Increase the proportion of youth detention facilities and adult city or county jails that screen for common bacterial sexually transmitted diseases within 24 hours of admission and treat STDs (when necessary) before persons are released.

Potential data sources: Annual Survey of Correctional Facilities, CDC, NCHSTP and National Institute of Justice; U.S. Department of Justice, Bureau of Justice Statistics.

25-15. (Developmental) Increase the proportion of all local health departments that have contracts with managed care providers for the treatment of nonplan partners of patients with bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia).

Potential data source: Survey of STD Programs, National Coalition of STD Directors (NCSD).

Personal Health Services

25-16. (Developmental) Increase the proportion of sexually active females aged 25 years and under who are screened annually for genital chlamydia infections.

Potential data sources: Family Planning Annual Report, OPA; STD Surveillance System, CDC, NCHSTP.

Routine screening for asymptomatic infection with *Chlamydia trachomatis* during pelvic examination is recommended for all sexually active female adolescents and for other women at high risk for chlamydial infection. While evidence is insufficient to make a recommendation concerning routine screening of sexually active males, in situations where asymptomatic chlamydial infection is high in males, screening using urine-based tests may be recommended to prevent spread of the infection.[58] Reported chlamydial infection rates in males are highest among those aged 20 to 24 years.

25-17. (Developmental) Increase the proportion of pregnant females screened for sexually transmitted diseases (including HIV infection and bacterial vaginosis) during prenatal health care visits, according to recognized standards.

Potential data source: STD Surveillance System, CDC, NCHSTP.

While evidence is insufficient to make a recommendation concerning routine screening of pregnant females for STDs, the benefits of early intervention in HIV-asymptomatic pregnant women, for example, are known. Similar benefits have been demonstrated in detecting and treating asymptomatic chlamydia infection in pregnancy.[58]

25-18. Increase the proportion of primary care providers who treat patients with sexually transmitted diseases and who manage cases according to recognized standards.

Target: 90 percent.

Baseline: 70 percent of primary care providers treated patients with STDs according to CDC STD Treatment Guidelines in 1988.

Target setting method: Retain 2000 target.

Data sources: National Disease and Therapeutic Index, IMS America; National Ambulatory Medical Care Survey (NAMCS), CDC, NCHS.

25-19. (Developmental) Increase the proportion of all sexually transmitted disease clinic patients who are being treated for bacterial STDs (chlamydia, gonorrhea, and syphilis) and who are offered provider referral services for their sex partners.

Potential data source: STD Surveillance System, CDC, NCHSTP.

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-3. Counseling about health behaviors

1-7. Core competencies in health provider training

3. Cancer

3-4. Cervical cancer deaths

3-11. Pap tests

7. Educational and Community-Based Programs

7-2. School health education

9. Family Planning

9-8. Abstinence before age 15 years

9-9. Abstinence among adolescents aged 15 to17 years

9-10. Pregnancy prevention and sexually transmitted disease protection

9-11. Pregnancy prevention education

9-12. Problems in becoming pregnant and maintaining a pregnancy

13. HIV

13-5. New HIV cases

13-6. Condom use

13-9. HIV/AIDS, STD, and TB education in State prisons

13-12. Screening for STDs and immunization for hepatitis B

14. Immunization and Infectious Diseases

14-3. Hepatitis B in adults and high-risk groups

14-28. Hepatitis B vaccination among high-risk groups

15. Injury and Violence Prevention

15-35. Rape or attempted rape

15-36. Sexual assault other than rape

16. Maternal, Infant, and Child Health

16-1. Fetal and infant deaths

16-6. Prenatal care

16-10. Low birth weight and very low birth weight

16-11. Preterm birth

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Bacterial and protozoal STDs: Refer to curable sexually transmitted infections caused by *Chlamydia trachomatis* (chlamydia), *Neisseria gonorrhoeae* (gonorrhea), *Treponema pallidum* (syphilis), *Haemophilus ducreyi* (chancroid), *Trichomonas vaginalis* (trichomoniasis), *bacterial vaginosis*, and other organisms.

Congenital syphilis: A condition in a fetus or newborn caused by infection with the syphilis bacteria from an untreated mother. Infected newborns show a wide spectrum of clinical signs, and only severe cases are clinically apparent at birth. Severe illness or death can result after birth if the newborn is not treated.

Fertility problems: Refer to the standard medical definitions of infertility (have not used contraception and have not become pregnant for 12 months or more) or impaired fecundity (women reporting no sterilizing operation and classified as finding it difficult or impossible to get pregnant or carry a baby to term).

Provider referral: Formerly called contact tracing, the process whereby health department personnel directly and confidentially notify the sex partners of infected individuals about their exposure to a sexually transmitted disease for the purposes of education, counseling, and referral to health care services.

STD complications: Refer to serious health problems that occur following an acute bacterial or viral STD. Among the most serious of these complications:

Pelvic inflammatory disease (PID): Can cause permanent damage to the female reproductive tract and lead to ectopic pregnancy, infertility, or chronic pelvic pain.

Infection of a fetus or newborn: Includes conditions such as congenital syphilis, neonatal herpes, HIV infection, eye infections, and pneumonia.

Preterm birth: Can result from maternal infection.

Cancer: Includes cervical cancer and its precursors (due to some strains of human papillomavirus) and liver cancer that can result after chronic infection with hepatitis B virus.

Sexually transmitted HIV infection: Can be facilitated by the presence of an inflammatory or ulcerative STD in one or both sex partners.

Syphilis elimination: Refers to the elimination of sustained domestic transmission of syphilis. Term means that there is no continuing transmission of the disease within a community or jurisdiction and absence of transmission within a jurisdiction except within 90 days of report of an imported case.

Viral STDs: Refer to the sexually transmitted viral infections—HIV infection, genital herpes, and HPV infection. Initial infections with these organisms may be asymptomatic or may cause only mild symptoms. Hepatitis B virus and hepatitis C virus can be transmitted through sexual activity.

References

1. United Nations. *Report of the International Conference on Population and Development*, Cairo, Egypt, September 5-13, 1994. New York: United Nations, 1995.

2. St. Louis, M.E.; Wasserheit, J.N.; and Gayle, H.D. Editorial: Janus considers the HIV pandemic-harnessing recent advances to enhance AIDS prevention. *American Journal of Public Health* 87:10-12, 1997.

3. Eng, T.R., and Butler, W.T., eds. The Hidden Epidemic: Confronting Sexually Transmitted Diseases. Washington, DC: National Academy Press, 1997.

4. Fish, A.; Fairweather, D.; Oriel, J.; and Ridgeway, G. *Chlamydia trachomatis* infection in a gynecology clinic population: Identification of high-risk groups and the value of contact tracing. *European Journal of Obstetrics, Gynecology and Reproductive Biology* 31:67-74, 1989.

5. Handsfield, H.; Jasman, L.; Roberts, P.; et al. Criteria for selective screening for *Chlamydia trachomatis* infection in women attending family planning clinics. *Journal of the American Medical Association* 255:1730-1734, 1986.

6. Judson, F. Gonorrhea. *Medical Clinics of North America* 74:1353-1367, 1990.

7. Stamm, W., and Holmes, K. *Chlamydia trachomatis* infections in the adult. In: Holmes, K.; Mardh, P.A.; Sparling, P.; et al. (eds.). *Sexually Transmitted Diseases*. 2nd ed. New York, NY: McGraw-Hill, Inc., 1990, 181-193.

8. Beasley, R.P.; Hwang, L.Y.; Lin, C.C.; and Chien, C.S. Hepatocellular carcinoma and hepatitis B virus. A prospective study of 22,707 men in Taiwan. *Lancet* 2(8256):1129-1133, 1981.

9. Marchbanks, P.; Annegers, J.; Coulam, C.; Strathy, J.; et al. Risk factors for ectopic pregnancy: A population-based study. *Journal of the American Medical Association* 259:1823-1827, 1988.

10. Cates, W. Epidemiology and control of sexually transmitted diseases in adolescents. In: Schydlower, M., and Shafer, M. (eds.). *AIDS and Other Sexually Transmitted Diseases*. Philadelphia, PA: Hanly & Belfus, Inc., 1990, 409-427.

11. Blank, S.; McDonnell, D.; Rubin, S.; Neal, J.; et al. New approaches to syphilis control: Finding opportunities for syphilis treatment and congenital syphilis prevention in a women's correctional setting. *Sexually Transmitted Diseases* 24(4):218-228, 1997.

12. Cohen, D.; Scribner, R.; Clark, J.; and Cory, D. The potential role of custody facilities in controlling sexually transmitted diseases. *American Journal of Public Health* 82:552-556, 1992.

13. Oh, M.; Cloud, G.; Wallace, L.; Reynolds, J.; et al. Sexual behavior and sexually transmitted diseases among male adolescents in detention. *Sexually Transmitted Diseases* 21:127-132, 1994.

14. Landry, D., and Forrest, J. Public health departments providing STD services. *Family Planning Perspectives* 28:261-266, 1996.

15. Beltrami, J.; Wright-DeAguero, L.; Fullilove, M.; St. Louis, M.; and Edlin, B. *Substance Abuse and the Spread of Sexually Transmitted Diseases*. Commissioned paper for the IOM Committee on Prevention and Control of STDs, 1997.

16. Marx, R.; Aral, S.; Rolfs, R.; Sterk, C.; and Kahn, J. Crack, sex, and STDs. *Sexually Transmitted Diseases* 18:92-101, 1991.

17. Gunn, R.; Montes, J.; Toomey, K.; Rolfs, R.; et al. Syphilis in San Diego County 1983-1992: Crack cocaine, prostitution, and the limitations of partner notification. *Sexually Transmitted Diseases* 22:60-66, 1995.

18. Abma, J.; Driscoll, A.; and Moore, K. Young women's degree of control over first intercourse: An exploratory analysis. *Family Planning Perspectives* 30(1):12-18, 1998.

19. Abma, J.; Chandra, A.; Mosher, W.; Peterson, L.; and Piccinino, L. Fertility, family planning, and women's health: New data from the 1995 National Survey of Family Growth. National Center for Health Statistics. *Vital and Health Statistics*, Series 23(19), 1997.

20. Miller, B.; Monson, B.; and Norton, M. The effects of forced sexual intercourse on white female adolescents. *Child Abuse and Neglect* 19:1289-1301, 1995.

21. Brandt, A. No Magic Bullet: A Social History of Venereal Disease in the United States Since 1880. New York, NY: Oxford University Press, Inc., 1985.

22. EDK Associates. The ABCs of STDs. New York, NY: EDK Associates, 1995.

23. Institute of Medicine. *Summary—The Hidden Epidemic: Confronting Sexually Transmitted Diseases*. Washington, DC: National Academy Press, 1997.

24. Lawrence, L. How OB-GYNs are failing women. *Glamour*, October 1997, 292.

25. Lowry, D., and Schindler, J. Prime time TV portrayals of sex, "Safe sex and AIDS: A longitudinal analysis." *Journalism Quarterly* 70:628-637, 1993.

26. Tsui, A.; Wasserheit, J.; and Haaga, J. Reproductive Health in Developing Countries: Expanding Dimensions, Building Solutions. Washington, DC: National Academy Press, 1997.

27. Centers for Disease Control and Prevention (CDC). Ten leading national notifiable infectious diseases—United States, 1995. *Morbidity and Mortality Weekly Report* 45:883-884, 1996.

28. American Social Health Association. Sexually Transmitted Diseases in America: How Many Cases and at What Cost? Menlo Park, CA: Kaiser Family Foundation, 1998.

29. Chandra, A., and Stephen, E. Impaired fecundity in the United States: 1982-1995. *Family Planning Perspectives* 30(1):34-42, 1998.

30. Holmes, K.; Johnson, D.; and Trostle, H. An estimate of the risk of men acquiring gonorrhea by sexual contact with infected females. *American Journal of Epidemiology* 91:170-174, 1970.

31. Brunham, R.; Holmes, K.; and Embree, J. Sexually transmitted diseases in pregnancy. In: Holmes, K.; Mardh, P.; Sparling, P.; et al. (eds.). *Sexually Transmitted Diseases*, 2nd ed. New York: McGraw-Hill, Inc., 1990, 771-801.

32. Goldenberg, R.L.; Andrews, W.W.; Yuan, A.C.; MacKay, H.T.; et al. Sexually transmitted diseases and adverse outcomes of pregnancy. *Clinics in Perinatology* 24(1):23-41, 1997.

33. Hillier, S.; Nugent, R.; Eschenbach, D.; Krohn, M.; Gibbs, R.; Martin, D.; et al. Association between bacterial vaginosis and preterm delivery of a low-birth-weight infant. *New England Journal of Medicine* 333:1737-1742, 1995.

34. Meis, P.J.; Goldenberg, R.L.; Mercer, G.; et al. The preterm prediction study: Significance of vaginal infections. *American Journal of Obstetrics and Gynecology* 173(4):1231-1235, 1995.

35. Alan Guttmacher Institute. *Sex and America's Teenagers*. New York, NY: the Institute, 1994.

36. Division of STD Prevention. *Sexually Transmitted Disease Surveillance, 1997*. U.S. Department of Health and Human Services, Public Health Service. Atlanta, GA: Centers for Disease Control and Prevention, September 1998.

37. Fleming, D.T.; McQuillan, G.M.; Johnson, R.E.; Nahmias, A.J.; et al. Herpes Simplex Virus Type 2 in the United States, 1976 to 1994. *New England Journal of Medicine* 337:1105-1111, 1997.

38. Warren, C.; Santelli, J.; Everett, S.; Kann, L.; et al. Sexual behavior among U.S. high school students, 1990-1995. *Family Planning Perspectives* 30(4):170-172, 1998.

39. Kost, I., and Forrest, J.D. American Women's Sexual Behavior and Exposure to Risk of Sexually Transmitted Diseases. *Family Planning Perspectives* 24:244-254, 1992.

40. CDC. *HIV/AIDS Surveillance Report, 1998*; 10(No. 2). Atlanta, GA. Division of HIV/AIDS—Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, CDC.

41. Anderson, R. The transmission dynamics of sexually transmitted diseases: The behavior component. In: Wasserheit, H.; Aral, S.; Holmes, K.; and Hitchcock, P. (eds.). *Research Issues in Human Behavior and Sexually Transmitted Diseases in the AIDS Era*. Washington, DC: American Society for Microbiology, 1991, 38-60.

42. May, R., and Anderson, R. Transmission dynamics of HIV infection. *Nature* 326:137-142, 1987.

43. American Social Health Association. Teenagers know more than adults about STDs, but knowledge among both groups is low. *STD News* 3:1, 5, 1996.

44. Kirby, D. Sexuality and HIV education programs in schools. In: Garrison, J.; Smith, M.; and Besharov, D. (eds.). *Sexuality and American Social Policy: A Seminar Series. Sex Education in the Schools*. Menlo Park, CA: Henry J. Kaiser Family Foundation, 1994, 1-41.

45. Flay, B. Mass media and smoking cessation: A critical review. *American Journal of Public Health* 77:153-160, 1987.

46. CDC. Hepatitis B virus: A comprehensive strategy for eliminating transmission in the United States through universal childhood vaccination: Recommendations of the Immunization Practices Advisory Committee (ACIP). *Morbidity and Mortality Weekly Report* 40(RR-13):1-20, 1991.

47. CDC. Under vaccination for hepatitis B among young men who have sex with men—San Francisco and Berkeley, California, 1992-1993. *Morbidity and Mortality Weekly Report* 45:215-217, 1996.

48. Roper, W.L.; Peterson, H.B.; and Curran, J.W. Commentary: Condoms and HIV prevention—clarifying the message. *American Journal of Public Health* 83:501-503, 1993.

49. Piccinino, L., and Mosher, W. Trends in contraceptive use in the United States: 1982-1995. *Family Planning Perspectives* 30(1):4-10, 46, 1998.

50. Anderson, J.; Brackbill, R.; and Mosher, W. Condom use for disease prevention among unmarried U.S. women. *Family Planning Perspectives* 28:25-28, 39, 1996.

51. CDC. HIV-risk behaviors of sterilized and nonsterilized women in drug-treatment programs—Philadelphia, 1989-1991. *Morbidity and Mortality Weekly Report* 41:149-152, 1992.

52. CDC. Surgical sterilization among women and use of condoms—Baltimore, 1989-1990. *Morbidity and Mortality Weekly Report* 41:568-575, 1992.

53. Cates, W., and Stone, K. Family planning, sexually transmitted diseases, and contraceptive choice: A literature update. *Family Planning Perspectives* 24:75-84, 1992.

54. Institute of Medicine. *Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families*. Brown, S., and Eisenberg, L. (eds.). Washington, DC: National Academy Press, 1995.

55. Rothenberg, R., and Potterat, J. Strategies for management of sex partners. In: Holmes, K.; Mardh, P.A.; Sparling, P.; Weisner, P.; et al. (eds.). *Sexually Transmitted Diseases*. 2nd ed. New York, NY: McGraw-Hill, Inc., 1990, 1081-1086.

56. CDC. Alternate case-finding methods in a crack-related syphilis epidemic—Philadelphia. *Morbidity and Mortality Weekly Report* 40:77-80, 1991.

57. Engelgau, M.; Woernle, C.; Rolfs, R.; Greenspan, J.; et al. Control of epidemic early syphilis: The results of an intervention campaign using social networks. *Sexually Transmitted Diseases* 22:203-209, 1995.

58. U.S. Department of Health and Human Services. *U.S. Preventive Services Task Force: Guide to Clinical Preventive Services*. 2nd ed. Washington, DC: the Department.

59. Hillis, S.; Nakashima, A.; Amsterdam, L.; Pfister, J.; et al. The impact of a comprehensive chlamydia prevention program in Wisconsin. *Family Planning Perspectives* 27:108-111, 1995.

60. Scholes, D.; Stergachis, A.; Heidrich, F.; Andrilla, H.; et al. Prevention of pelvic inflammatory disease by screening for cervical chlamydial infection. *New England Journal of Medicine* 334:1362-1366, 1996.

61. Britton, T.; DeLisle, S.; and Fine, D. STDs and family planning clinics: A regional program for chlamydia control that works. *American Journal of Gynecological Health* 6:80-87, 1992.

62. Division of STD Prevention. *Sexually Transmitted Disease Surveillance 1997 Supplement—Chlamydia Prevalence Monitoring Project Annual Report*. U.S. Department of Health and Human Services, Public Health Service. Atlanta, GA: Centers for Disease Control

and Prevention, December 1998.

63. Kiviat, N.; Koutsky, L.; and Paavonen, J. Cervical neoplasia and other STD-related genital tract neoplasias. In: Holmes, K.; Mardh, P.; Sparling, P.; et al.; (eds.). *Sexually Transmitted Diseases, 3rd Edition*. New York: McGraw-Hill, 1999, 811-831.

26

Substance Abuse

Co-Lead Agencies: National Institutes of Health; Substance Abuse and Mental Health Services Administration

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Goal

Reduce substance abuse to protect the health, safety, and quality of life for all, especially children.

Overview

Substance abuse and its related problems are among society's most pervasive health and social concerns. Each year, about 100,000 deaths in the United States are related to alcohol consumption.[1] Illicit drug abuse and related acquired immunodeficiency syndrome (AIDS) deaths account for at least another 12,000 deaths. In 1995, the economic cost of alcohol and drug abuse was $276 billion.[2] This represents more than $1,000 for every man, woman, and child in the United States to cover the costs of health care, motor vehicle crashes, crime, lost productivity, and other adverse outcomes of alcohol and drug abuse.

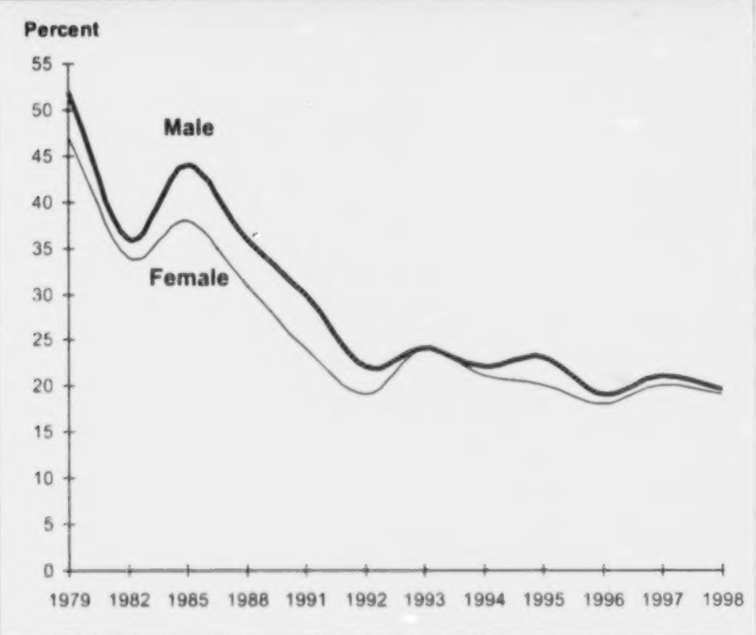
Issues and Trends

A substantial proportion of the population drinks alcohol. Forty-four percent of adults aged 18 years and older (more than 82 million persons) report having consumed 12 or more alcoholic drinks in the past year.[3] Among these current drinkers, 46 percent report having been intoxicated at least once in the past year—nearly 4 percent report having been intoxicated weekly. More than 55 percent of current drinkers report having consumed five or more drinks on a single day at least once in the past year—more than 12 percent did so at least once a week. Nearly 20 percent of current drinkers report having consumed an average of more than two drinks per day. Nearly 10 percent of current drinkers (about 8 million persons) meet diagnostic criteria for alcohol dependence. An additional 7 percent (more than 5.6 million persons) meet diagnostic criteria for alcohol abuse.[4]

Alcohol use and alcohol-related problems also are common among adolescents.[5] Age at onset of drinking strongly predicts development of alcohol dependence over the course of the lifespan. About 40 percent of those who start drinking at age 14 years or under develop alcohol dependence at some point in their lives; for those who start drinking at age 21 years or older, about 10 percent develop alcohol dependence at some point in their lives.[6] Persons with a family history of alcoholism have a higher prevalence of lifetime dependence than those without such a history.[7]

Excessive drinking has consequences for virtually every part of the body. The wide range of alcohol-induced disorders is due (among other factors) to differences in the amount, duration, and patterns of alcohol consumption, as well as differences in genetic vulnerability to particular alcohol-related consequences.[8]

Proportion of Adolescents Aged 12 to 17 Years Reporting Use of Alcohol in the Past Month
(By gender and year, United States, 1979–98)



Source: National Household Survey on Drug Abuse. Preliminary data, SAMHSA, OAS, June 1998.

Light-to-moderate drinking can have beneficial effects on the heart, particularly among those at greatest risk for heart attacks, such as men over age 45 years and women after menopause.[9] Moderate drinking generally refers to consuming one or two drinks per day. Moderate drinking, however, cannot be achieved by simply averaging the number of drinks. For example, consuming seven drinks on a single occasion will not have the same effects as consuming one drink each day of the week.

Long-term heavy drinking increases risk for high blood pressure, heart rhythm irregularities (arrhythmias), heart muscle disorders (cardiomyopathy), and stroke. Long-term heavy drinking also increases the risk of developing certain forms of cancer, especially of the esophagus, mouth, throat, and larynx.[10] Heavy alcohol use also increases risk for cirrhosis and other liver disorders[11] and worsens the outcome for patients with hepatitis C.[12] Drinking also may increase the risk for developing cancer of the colon and rectum.[10] Women's risk of developing breast cancer increases slightly if they drink two or more drinks per day.[13]

Alcohol use has been linked with a substantial proportion of injuries and deaths from traffic crashes, falls, fires, and drownings.[11] It also is a factor in homicide, suicide, marital violence, and child abuse[14] and has been associated with high-risk sexual behavior.[11, 14, 16] Persons who drink even relatively small amounts of alcoholic beverages may contribute to alcohol-related death and injury in occupational incidents or if they drink before operating a vehicle.[11] In 1996, alcohol use was associated with 41 percent of all motor vehicle crash fatalities, a significantly lower percentage than in the 1980s.[17]

Although there has been a long-term drop in overall use, many Americans still use illicit drugs. In 1997, there were 13.9 million current users of any illicit drug in the total household population aged 12 years and older, representing 6.4 percent of the total population.[18] Marijuana is the most commonly used illicit drug, and 60 percent of users abuse marijuana only.[18] Thirty-six percent of persons aged 12 years and older have used an illegal drug in their lifetime. Of these, more than 90 percent used marijuana or hashish, and approximately 30 percent tried cocaine.[18] Relatively rare in 1996, methamphetamine use began spreading in 1997.[18, 19]

Estimated rates of chronic drug use also are significant. Of the estimated 4.4 million chronic drug users in the United States in 1995, 3.6 million were chronic cocaine users (primarily crack cocaine), and 810,000 were chronic heroin users.[20]

Drug dependence is a chronic, relapsing disorder. Addicted persons frequently engage in self-destructive and criminal behavior. Research has confirmed that treatment can help end dependence on addictive drugs and reduce the consequences of addictive drug use on society. While no single approach for substance abuse and addiction treatment exists, comprehensive and carefully tailored treatment works.[21]

Drug use among adolescents aged 12 to 17 years doubled between 1992 and 1997, from 5.3 percent to 11.4 percent.[18] Youth marijuana use has been associated with a number of dangerous behaviors. Nearly 1 million youth aged 16 to 18 years (11 percent of the total) have reported driving in the past year at least once within 2 hours of using an illegal drug (most often marijuana).[22] Adolescents aged 12 to 17 years who smoke marijuana were more than twice as likely to cut class, steal, attack persons, and destroy property than those who did not smoke marijuana.[23] Drug and alcohol use by youth also is associated with other forms of unhealthy and unproductive behavior, including delinquency and high-risk sexual activity.

Illegal use of drugs, such as heroin, marijuana, cocaine, and methamphetamine is associated with other serious consequences, including injury, illness, disability, and death as well as crime, domestic violence, and lost workplace productivity. Drug users and persons with whom they have sexual contact run high risks of contracting gonorrhea, syphilis, hepatitis, tuberculosis, and human immunodeficiency virus (HIV). The relationship between injection drug use and HIV/AIDS transmission is well-known. Injection drug use also is associated with hepatitis B and C infections.[24] The use of cocaine, nitrates, and other substances can produce cardiac irregularities and heart failure, convulsions, and seizures. Cocaine use temporarily narrows blood vessels in the brain, contributing to the risk of strokes (bleeding within the brain) and cognitive and memory deficits.[25] Long-term consequences, such as chronic depression, sexual dysfunction, and psychosis, may result from drug use.

Substance abuse, including tobacco use and nicotine dependence, is associated with a variety of other serious health and social problems. An analysis of the epidemiological evidence reveals that 72 conditions requiring hospitalization are wholly or partially attributable to substance abuse.[26]

Substance abuse contributes to cancers that, until recently, were thought to be unrelated. Advances in research techniques since the 1980s, including advanced brain imaging and the study of the effects of alcohol and drug abuse on individual cells, have helped to document the alteration of healthy systems by all forms of substance abuse, including marijuana use. Researchers have identified lasting brain and nervous system damage from drugs, including changes in nerve cell structure associated with alcohol and drug dependence. Other research has focused on the long-term effects of alcohol and drug abuse on the immune system as well as the effects of prenatal alcohol and drug exposure on the behavior and development of children.

Research confirms that a substantial number of frequent users of cocaine, heroin, and illicit drugs other than marijuana have co-occurring chronic mental health disorders. Some of these persons can be identified by their behavior problems at the time of their entry into elementary school.[27] Such youth tend to use substances at a young age and exhibit sensation-seeking (or "novelty-seeking") behaviors. These youth benefit from more intensive preventive interventions, including family therapy and parent training programs.[28, 29]

The stigma attached to substance abuse increases the severity of the problem. The hiding of substance abuse, for example, can prevent persons from seeking and continuing treatment and from having a productive attitude toward treatment. Compounding the problem is the gap between the number of available treatment slots and the number of persons seeking treatment for illicit drug use or problem alcohol use.

Disparities

Substance abuse affects all racial, cultural, and economic groups. Alcohol is the most commonly used substance, regardless of race or ethnicity, and there are far more persons who smoke cigarettes than persons who use illicit drugs. Usage rates for an array of substances reveal that, for adolescents aged 12 to 17 years:

- Whites and Hispanics are more likely than African Americans to use alcohol.
- Whites are more likely than African Americans and Hispanics to use tobacco.
- Whites are more likely than African Americans and Hispanics to use illicit drugs.

Additional findings include the following:

Substance Use in the Past Year, 1997						
	White		Hispanic		African American	
Substance	All Ages	Aged 12 to 17 Years	All Ages	Aged 12 to 17 Years	All Ages	Aged 12 to 17Years
	Percent					
Alcohol	67.8	36.0	55.6	32.5	52.7	27.3
Cigarette	33.7	29.1	30.4	20.8	32.5	18.2
Any illicit drug	11.3	19.6	9.9	16.5	12.1	15.7
Marijuana	9.1	16.3	7.5	13.8	9.9	13.4
Cocaine	1.9	2.5	2.0	2.3	2.4	0.2
Inhalants	1.2	5.2	1.1	3.7	0.4	1.0
Heroin	0.2	*	0.6	*	0.5	*

*Not available

Source: National Household Survey on Drug Abuse: Population Estimates 1997, SAMHSA

Older adolescents and adults with co-occurring substance abuse and mental health disorders need explicit and appropriate treatment for their disorders. Those who suffer from co-occurring disorders, however, are frequently turned away from treatment designed for one or the other problem but not for both. (See Focus Area 18. Mental Health and Mental Disorders).

The population aged 65 years and older faces risks for alcohol-related problems, although this group consumes comparatively low amounts of alcoholic beverages.[30] Adverse alcohol-drug interaction can put older people in the hospital, since many take multiple medications. In addition, many cases of memory deficits and dementia now are understood to result from alcoholism.[31]

Opportunities

The direct application of prevention and treatment research knowledge is particularly important in solving substance abuse problems. Developing adaptations of research-proven programs for diverse racial and ethnic populations, field testing them with high-quality process and outcome evaluations, and providing them where they are most needed are critical. Interventions appropriate to the population to be served, including interventions to address gaps in substance abuse treatment capacity, must be identified and implemented by Federal, Tribal, regional, State, and community-based providers in a variety of settings.

Scientific research has identified many opportunities to prevent alcohol-related problems. For example, studies indicate that school-based programs focused on altering perceived peer-group norms about alcohol use[32,33] and developing skills in resisting peer pressures to drink[34,35,36] reduce alcohol use among participating students. Communitywide programs involving school curricula, peer leadership, parental involvement and education, and community task forces also have reduced alcohol use among adolescents.[37]

Raising the minimum legal drinking age to 21 years was accompanied by reduced alcohol consumption, traffic crashes, and related fatalities among young persons under age 21 years.[38] Reductions in alcohol-related traffic crashes are associated with many policy and program measures[39]—among them, administrative revocation of licenses for drinking and driving[40] and lower legal blood alcohol limits for youth[41] and adults.[42] Community programs involving multiple city departments and private citizens have reduced driving after drinking and traffic deaths and injuries.[43] In addition, a combination of community mobilization, media advocacy, and enhanced law enforcement has been shown to reduce alcohol-related traffic crashes and sales of alcohol to minors.[44]

Higher prices or taxes for alcoholic beverages are associated with lower alcohol consumption and lower levels of a wide variety of adverse outcomes—including the probability of frequent beer consumption by young persons,[45] the probability of adults drinking five or more drinks on a single occasion,[46] death rates from cirrhosis[47] and motor vehicle crashes,[48,49] frequency of drinking and driving,[50] and some categories of violent crime.[51] One study suggests that, among adults, the effect of alcoholic beverage prices on frequency of heavy drinking varies with knowledge of the health consequences of heavy drinking: better informed heavy drinkers are more responsive to price changes.[52]

In college settings, brief one-on-one motivational counseling has proved effective in reducing alcohol-related problems among high-risk drinkers.[53] Research on the effect of the density of alcohol outlets on violence is inconclusive.[54,55]

Many opportunities to prevent drug-related problems have been identified. Core strategies for preventing drug abuse among youth include raising awareness, educating and training parents and others, strengthening families, providing alternative activities, building skills and confidence, mobilizing and empowering communities, and environmental approaches. Studies indicate that making youth and others aware of the health, social, and legal consequences associated with drug abuse has an impact on use. Parents also play a primary role in helping their children understand the dangers of substance abuse and in communicating their expectation that drug and alcohol use will not be tolerated. Research suggests that improving parent/child attachment and supervision and monitoring also protects youth from substance abuse. Alternative activities for youth teach social skills and provide an alternative to substance abuse. According to one study, programs that help young persons develop psycho social and peer resistance skills are more successful than other programs in preventing drug abuse.[21] Findings suggest that having community partnerships in place for sustained periods of time produces significant results in decreasing alcohol and drug use in males. Literature shows that having "buy-in" from local participants greatly enhances the success of any endeavor. Studies also show that changing norms is extremely effective in reducing substance abuse and related problems.[21]

For substance abuse prevention to be effective, people need access to culturally, linguistically, and age-appropriate services; job training and employment; parenting training; general education; more behavioral research; and programs for women, dually diagnosed patients, and persons with learning disabilities. Particular attention must be given to young persons under age 18 years who have an addicted parent, since these youth are at increased risk for substance abuse. Because alcoholism and drug abuse continue to affect lesbians, gay men, and transgendered persons at two to three times the rate of the general population,[56] programs that address the special risks and needs of these population groups also are needed. Government, employers, the faith community, and other organizations in the private and nonprofit sectors must increase their level of cooperation and coordination to ensure that multiple service needs are met.

The prevention and treatment of substance abuse require that all abused substances be addressed—from tobacco and alcohol to marijuana and other illicit drugs. Tobacco prevention and treatment are equally important parts of a comprehensive substance abuse prevention program. (See Focus Area 27. Tobacco Use.)

Interim Progress Toward Year 2000 Objectives

Of the 20 substance abuse objectives in Healthy People 2000, 2 have met or surpassed their targets. More than 90 percent of worksites with 50 or more employees have adopted policies on alcohol and drugs (1995), exceeding the Healthy People 2000 target of 60 percent. One additional target has been met—monitoring access to treatment programs by the under served (1996).

Progress has been made toward other objectives. Alcohol-related motor vehicle crash deaths declined to 6.5 per 100,000 population (1996), attributed in part to passage of State laws mandating administrative license revocation, setting maximum blood alcohol concentration levels of 0.08 percent for drivers aged 21 years and older, and establishing zero tolerance for alcohol in the blood of drivers under age 21 years. The cirrhosis death rate declined to 7.4 per 100,000 population, although the rate for American Indians or Alaska Natives remains significantly higher than that of other groups. Average age of first use of harmful substances by adolescents aged 12 to 17 years has increased. In addition, past-month use of alcohol by adolescents aged 12 to 17 years has declined, as has steroid use by high school seniors.

Less progress has been made toward other targets. Past-month use of marijuana and cigarettes among adolescents aged 12 to 17 years has increased since 1994.

Among high school seniors, both perception of harm and perception of social disapproval of substance abuse have declined. For the total population, rates of drug-related deaths and drug-abuse-related emergency department visits have increased.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Healthy People 2010—Summary of Objectives

Substance Abuse

Goal: Reduce substance abuse to protect the health, safety, and quality of life for all, especially children.

Number	Objective
Adverse Consequences of Substance Use and Abuse	
26-1	Motor vehicle crash deaths and injuries
26-2	Cirrhosis deaths
26-3	Drug-induced deaths
26-4	Drug-related hospital emergency department visits
26-5	Alcohol-related hospital emergency department visits
26-6	Adolescents riding with a driver who has been drinking
26-7	Alcohol- and drug-related violence
26-8	Lost productivity
Substance Use and Abuse	
26-9	Substance-free youth
26-10	Adolescent and adult use of illicit substances
26-11	Binge drinking
26-12	Average annual alcohol consumption
26-13	Low-risk drinking among adults
26-14	Steroid use among adolescents
26-15	Inhalant use among adolescents
Risk of Substance Use and Abuse	
26-16	Peer disapproval of substance abuse
26-17	Perception of risk associated with substance abuse
Treatment for Substance Abuse	
26-18	Treatment gap for illicit drugs
26-19	Treatment in correctional institutions
26-20	Treatment for injection drug use
26-21	Treatment gap for problem alcohol use

State and Local Efforts

26-22 Hospital emergency department referrals
26-23 Community partnerships and coalitions
26-24 Administrative license revocation laws
26-25 Blood alcohol concentration (BAC) levels for motor vehicle drivers

Adverse Consequences of Substance Use and Abuse

26-1. Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes.

Target and baseline:

Objective	Reduction in Consequences of Motor Vehicle Crashes	1997 Baseline	2010 Target
		Per 100,000 Population	
26-1a.	Alcohol-related deaths	6.1	4
26-1b.	Alcohol-related injuries	122	65
26-1c.	Drug-related deaths	**Developmental**	
26-1d.	Drug-related injuries	**Developmental**	

Target setting method: Consistent with the U.S. Department of Transportation for 26-1a; 47 percent improvement for 26-1b.

Data source: Fatality Analysis Reporting System (FARS), DOT, National Highway Traffic Safety Administration (NHTSA); General Estimates System (GES), DOT.

Total Population, 1997 (unless noted)	Alcohol-Related Motor Vehicle Crashes 26-1a. Deaths	 26-1b. Injuries
	Rate per 100,000	
TOTAL	6.1	122
Race and ethnicity		
American Indian or Alaska Native	19.2 (1995)	DNC
Asian or Pacific Islander	2.4 (1995)	DNC
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	6.4 (1995)	DNC
White	6.0 (1995)	DNC

Total Population, 1997 (unless noted)	Alcohol-Related Motor Vehicle Crashes 26-1a. Deaths	 26-1b. Injuries
	Rate per 100,000	
Hispanic or Latino	DNA	DNC
Not Hispanic or Latino	DNA	DNC
Black or African American	DNA	DNC
White	DNA	DNC
Gender		
Female	2.9	DNA
Male	9.4	DNA
Age		
All persons aged 15 to 24 years	11.7	DNA
Education level		
Less than high school	DNC	DNC
High school graduate	DNC	DNC
At least some college	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Progress has been achieved in reducing the rate of alcohol-related driving fatalities, which declined from 9.8 deaths per 100,000 population in 1987 to 6.1 deaths per 100,000 in 1997. However, fatal injuries caused by motor vehicle crashes in which either a driver or nonoccupant (that is, pedestrian or bicyclist) was under the influence of alcohol or drugs remain a serious problem in the United States.

Of particular concern is the fatality rate among Native Americans and persons aged 15 to 24 years. In 1994, the alcohol involvement rate in fatal traffic crashes for American Indian or Alaska Native men was four times higher (28 per 100,000 population) than for the general population. For persons aged 15 to 24 years, the rate was 11.7 per 100,000 population in 1997. Based on these rates, about 3 in every 10 persons in the United States will be involved in an alcohol-related crash sometime in their lives. The alcohol-related traffic fatality rate for youth, however, has decreased by more than 50 percent since 1982, from 22 deaths per 100,000 population to 10 deaths per 100,000 population in 1996.[57] The National Highway Traffic Safety Administration estimates that since 1975, over 17,300 lives have been saved by enforcement of minimum drinking age laws.[57]

The number of children who are victims of alcohol- and drug-related traffic crashes also is significant. In 1997, of traffic crashes in which 3,157 children under age 16 years were killed, nearly 21 percent were alcohol related.

Crash-related injuries also are a serious problem. In 1997, crash-related injuries totaled 3,399,000, compared to 41,967 crash-related deaths.[38] A reduction in all injuries resulting from alcohol- and drug-related driving is needed. Such injuries significantly contribute to emergency department use and overall health care costs and cause personal tragedies for families.

Although alcohol and its relationship to motor vehicle crashes has been studied more extensively than other substances, tracking drug-related fatalities and injuries is needed. This extension will promote the understanding that driving while under the influence of drugs is a serious problem and will help reduce drug-related fatalities.

Reductions in traffic crashes are the result, in part, of many policy and program measures—among them, raising the minimum legal drinking age to 21 years,[39] administrative revocation of licenses for drinking and driving,[40] lower legal blood alcohol limits for youth[41] and adults,[42] and higher prices through increased taxation of alcoholic beverages.[43, 44] Higher prices for alcoholic beverages also are associated with reduced frequency of drinking and driving.[45] In addition, community programs involving multiple city departments and private citizens have reduced both driving after drinking and traffic deaths and injuries.[46]

26-2. Reduce cirrhosis deaths.

Target: 3 deaths per 100,000 population.

Baseline: 9.4 cirrhosis deaths per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	**Cirrhosis Deaths** Rate per 100,000
TOTAL	9.6
Race and ethnicity	
American Indian or Alaska Native	24.2
Asian or Pacific Islander	3.4
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	10.7
White	9.6

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Total Population, 1997*	Cirrhosis Deaths Rate per 100,000
Hispanic or Latino	15.9
Not Hispanic or Latino	9.6
Black or African American	10.9
White	8.9
Gender	
Female	6.2
Male	13.6
Education level (aged 25 to 64 years)	
Less than high school	20.1
High school graduate	14.0
At least some college	5.8

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.
*New data for population groups will be added when available.

Sustained heavy alcohol consumption is the leading cause of cirrhosis, 1 of the 10 leading causes of death in the United States.[61, 62, 63, 64, 65] Cirrhosis occurs when healthy liver tissue is replaced with scarred tissue until the liver is unable to function effectively. Changes in alcohol consumption patterns over time are associated with changes in the death rate from cirrhosis. Improvements in disease management and in the availability of treatment for alcoholism, however, also may have contributed to a decline in cirrhosis deaths since 1973. In addition, higher State excise tax rates on distilled spirits are associated with lower death rates from cirrhosis.[47]

26-3. Reduce drug-induced deaths.

Target: 1 per 100,000 population.

Baseline: 5.1 drug-induced deaths per 100,000 population in 1998 (preliminary data; age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

Total Population, 1997*	Drug-Induced Deaths Rate per 100,000
TOTAL	6.0
Race and ethnicity	
American Indian or Alaska Native	6.6
Asian or Pacific Islander	1.6
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	9.0
White	5.7
Hispanic or Latino	6.0
Not Hispanic or Latino	6.0
Black or African American	9.2
White	5.6
Gender	
Female	3.6
Male	8.3
Education level (aged 25 to 64 years)	
Less than high school	18.4
High school graduate	13.9
At least some college	5.8

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Age adjusted to the year 2000 standard population.
*New data for population groups will be added when available.

Causes of drug-induced deaths include drug psychosis, drug dependence, suicide, and intentional and accidental poisoning that result from illicit drug use. Declining initiation, number of cases, and intensity of drug abuse should be reflected in fewer drug-induced deaths. However, the prevention of suicide, accidental poisoning, and fatal interaction among medications contributes to changes in the statistics measured in this objective.

26-4. Reduce drug-related hospital emergency department visits.

Target: 350,000 visits per year.

Baseline: 542,544 drug-related hospital emergency department visits in 1998.

Target setting method: 35 percent improvement.

Data source: Drug Abuse Warning Network (DAWN), SAMHSA.

Drug-related hospital emergency department (ED) visits are another major indicator of the harmful effects of drugs. In hospital EDs, a "drug-related episode" is defined as one resulting from the nonmedical use of a drug. This includes the unprescribed use of prescription drugs, use of drugs contrary to approved labeling, and use of illicit drugs. Episodes are abstracted from medical records by hospital staff or hired clerks. To be counted as having a drug-related episode, the ED patient must be aged 6 years or older and meet four criteria: the patient was treated in the hospital's ED; the presenting problem was induced by or related to drug use; the case involved the nonmedical use of a legal drug or any use of an illegal drug; and the patient's reason for taking the substance(s) included dependence, suicide attempt or gesture, or psychic effects.

"Suicide attempt or gesture" and dependence were the most frequently cited motives for taking a substance that resulted in an ED episode, with each accounting for 35 percent of all episodes in 1998. In 1998, 55 percent of the drug-related ED episodes occurred among adolescents and adults aged 16 to 34 years and 44 percent among persons aged 35 years and older. Whites accounted for 54 percent of drug-related ED episodes. African Americans and Hispanics accounted for 25 percent and 11 percent, respecitively.[66]

26-5. (Developmental) Reduce alcohol-related hospital emergency department visits.

Potential data source: National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

Alcohol consumption is associated with a wide range of events that can result in ED visits—among them, traffic crashes, violence, and alcohol poisoning. In 1996, alcohol-related hospital ED visits (2.2 million) accounted for 2.4 percent of all ED visits.[67] Visits related to both alcohol and drugs accounted for an additional 0.4 percent. However, these figures, based on a national probability survey of hospital EDs, are probably underestimates since information on alcohol involvement often is missing from ED medical records.[67]

An analysis of 1995 data from the same survey found that alcohol-related visits are 1.6 times as likely as other ED visits to be injury related; in 20 percent of alcohol-related visits, the principal diagnosis is alcohol abuse or alcohol dependence.[68] Other studies, based on smaller samples and different measures of alcohol involvement, suggest a large proportion of young persons and trauma victims are *intoxicated* when they visit the ED.[69, 70, 71]

Screening for alcohol problems in the ED offers an opportunity for early intervention and appropriate referral of patients and may reduce subsequent illness, injury, and death.[72] Policy measures that reduce specific alcohol-related problems[11]—for example, traffic crashes or violence—also may help reduce alcohol-related ED visits.

26-6. Reduce the proportion of adolescents who report that they rode, during the previous 30 days, with a driver who had been drinking alcohol.

Target: 30 percent.

Baseline: 37 percent of students in grades 9 through 12 reported riding with a driver who had been drinking alcohol in 1997.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Students in Grades 9 Through 12, 1997	**Rode With Drinking Driver During Previous 30 Days** Percent
TOTAL	37
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNC
White	DNC
Hispanic or Latino	43
Not Hispanic or Latino	DNC
Black or African American	34
White	37
Gender	
Female	35
Male	38

Students in Grades 9 Through 12, 1997	Rode With Drinking Driver During Previous 30 Days Percent
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Health risk behaviors that contribute to the leading causes of illness, death, and social problems among youth and adults often are established during youth, extend into adulthood, and are interrelated. In the United States, 72 percent of all deaths among school-aged youth and young adults result from four causes: motor vehicle crashes, other unintentional injuries, homicide, and suicide. Many high school students practice behaviors that may increase their likelihood of death from these four causes. Hispanic students are more likely than African American or white students to ride with a driver who has been drinking.

Rates of drinking across State surveys ranged from 19.4 percent to 52.5 percent (median: 36.0 percent). Across the local surveys, the rates ranged from 20.7 percent to 43.1 percent (median: 32.1 percent).[73] Reducing the number of adolescents who ride in a motor vehicle with another adolescent driver who has been drinking is an important step to lower motor-vehicle related deaths and injuries.

26-7. (Developmental) Reduce intentional injuries resulting from alcohol- and illicit drug-related violence.

Potential data source: National Crime Victimization Survey (NCVS), U.S. Department of Justice, Bureau of Justice Statistics.

A review of the literature found that the percentage of homicide offenders who were drinking when they committed the offense ranged from 7 to 85 percent, with most studies finding the figure greater than 60 percent.[74] Drugs, and most commonly alcohol, also are a factor in a significant number of firearm-related deaths.[75] In 1996, juvenile and adult arrestees testing positive for drugs had been frequently arrested for violent offenses, such as robbery, assault, and weapons offenses. Two-thirds of victims who experienced violence by an intimate (a current or former spouse, boyfriend, or girlfriend) reported that alcohol had been involved. Among spousal victims, three out of four incidents involved an offender who was drinking. Thirty-one percent of strangers who were victimized believed that the offender was using alcohol.[76] Efforts are underway to establish targeted prevention and treatment programs aimed at reducing violence related to or caused by alcohol and drug use.[77, 78] Efforts are underway to develop surveillance systems aimed at reinforcing local community activities.[79]

26-8. (Developmental) Reduce the cost of lost productivity in the workplace due to alcohol and drug use.

Potential data source: Periodic estimates of economic costs of alcohol and drug use, NIH, NIAAA and NIDA.

The economic cost of alcohol and drug abuse in the United States was estimated at $276 billion for 1995,[2] with $167 billion attributed to alcohol abuse and $110 billion to drug abuse. Productivity losses accounted for $119 billion of the costs of alcohol abuse and $77 billion of the costs of drug abuse.

The majority of alcohol-related productivity losses (62 percent) were attributed to alcohol-related illness. These costs, measured as impaired earnings among those with a history of alcohol dependence, may result from increased unemployment, poor job performance, and limited career advancement. The adverse effects of early alcohol use on educational attainment may underlie these effects. Productivity losses were greatest for males who started drinking before age 15 years.

For drug abuse, most (56 percent) of the estimated productivity losses were associated with crime, including lost earnings of victims (3 percent) and incarcerated perpetrators (26 percent) of drug-related crime and foregone legitimate earnings because of participation in the drug trade (28 percent). Studies from offender populations have found early onset of drinking and drug use and high dropout rates; these may reflect causal linkages.[2]

As indicators of the adverse consequences of alcohol and drug misuse, estimates of lost productivity have important limitations, including concerns about statistical and methodological issues and data quality and completeness. For example, productivity losses cannot be observed directly, implying some inherent imprecision in these estimates, so that changes in productivity losses may not be detected. Also, there is persistent uncertainty in quantifying the causal roles of alcohol and drugs in generating productivity losses. Finally, some likely effects on productivity are omitted from current estimates, mainly because suitable data are lacking. These measurement concerns notwithstanding, efforts to reduce or delay alcohol and drug use may lead to significant reductions in productivity losses over the long run.

26-9. Increase the age and proportion of adolescents who remain alcohol and drug free.

Target and baseline:

Objective	Increase Average Age of First Use in Adolescents Aged 12 to 17 Years	1997 Baseline	2010 Target
		Average Age in Years	
26-9a.	Alcohol	13.1	16.1
26-9b.	Marijuana	13.7	17.4

Target setting method: Better than the best for alcohol use; consistent with Office of National Drug Control Policy for marijuana use.

Data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

Adolescents Aged 12 to 17 Years, 1997	26-9a. First Alcohol Use	26-9b. First Marijuana Use
	Average Age in Years	
TOTAL	13.1	13.7
Race and ethnicity		
American Indian or Alaska Native	13.3	14.1
Asian or Pacific Islander	12.7	13.8
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	12.9	13.6
White	13.1	13.7
Hispanic or Latino	13.0	13.5
Not Hispanic or Latino	DNA	DNA
Black or African American	DNA	DNA
White	DNA	DNA
Gender		
Female	13.4	14.0
Male	12.7	13.5

Adolescents Aged 12 to 17 Years, 1997	26-9a. First Alcohol Use	26-9b. First Marijuana Use
	Average Age in Years	
Family income level		
Poor .	12.9	13.2
Near poor	13.0	13.8
Middle/high income	13.1	13.8

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Target and baseline:

Objective	Increase in High School Seniors Never Using Substances	1998 Baseline	2010 Target
		Percent	
26-9c.	Alcoholic beverages	19	29
26-9d.	Illicit drugs	46	56

Target setting method: Better than the best.

Data source: Monitoring the Future Study, NIH, NIDA.

High School Seniors, 1998	26-9c. Never Used Alcoholic Beverages	29-9d. Never Used Any Illicit Drug
	Percent	
TOTAL	19	46
Race and ethnicity		
American Indian or Alaska Native	DSU	DSU
Asian or Pacific Islander	DNC	DNC
Asian	DSU	DSU
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	28	55
White	16	44
Hispanic or Latino	18	43
Not Hispanic or Latino	DNC	DNC
Black or African American	DNC	DNC
White	DNC	DNC

High School Seniors, 1998	26-9c. Never Used Alcoholic Beverages	29-9d. Never Used Any Illicit Drug
	Percent	
Gender		
Female	19	50
Male	18	43
Family income level		
Poor	DNC	DNC
Near poor	DNC	DNC
Middle/high income	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

An important goal of U.S. policy for the prevention of substance abuse among youth is to increase the percentage of young persons who reach adulthood without using tobacco, illicit drugs, or alcohol. (See Focus Area 27. Tobacco Use.) Strengthening the ability of children and teenagers to reject all such substances is an important and critical element in prevention activities because the required skills and attitudes can carry over into adulthood, long after family constraints and other influences have lost their effectiveness.[80]

From 1985 until 1995, the percentage of high school seniors who reported they had never used tobacco, drugs, or alcohol increased dramatically.[81] This increase clearly demonstrated the value of the national investment in prevention because it followed many years of virtually no change in the percentage of high school seniors who reported they had never used any substance.

To achieve overall prevention goals, local activities are important. Some of the best prevention approaches involve comprehensive, multistrategy prevention interventions. Comprehensive community-based programs include interventions that influence individual behavior and attitudes through education, for example, and interventions that change environments through controls on the availability of substances. Comprehensive programs must be applied universally to the general population and in a more intensive fashion to selected and indicated groups and persons known to be at high risk for serious drug problems or to targeted groups of persons already exhibiting early signs of drug use. The need to sustain universal preventive interventions, selective preventive interventions, and indicated preventive interventions requires coordination among schools, State and local governments, businesses, the faith community, civic groups, and other elements of the community.

26-10. Reduce past-month use of illicit substances.

26-10a. Increase the proportion of adolescents not using alcohol or any illicit drugs during the past 30 days.

Target: 89 percent.

Baseline: 77 percent of adolescents aged 12 to 17 years reported no alcohol or illicit drug use in past 30 days in 1997.

Target setting method: Better than the best.

Data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

Adolescents Aged 12 to 17 Years, 1997	26-10a. No Alcohol or Illicit Drug Use in Past 30 Days	No Alcohol Use in Past 30 Days*	No Illicit Drug Use in Past 30 Days*
		Percent	
TOTAL	77	80	89
Race and ethnicity			
American Indian or Alaska Native	55	DSU	DSU
Asian or Pacific Islander	86	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	80	DNA	DNA
White	76	DNA	DNA
Hispanic or Latino	78	81	90
Not Hispanic or Latino	DNA	DNA	DNA
Black or African American	DNA	84	89
White	DNA	78	88
Gender			
Female	78	80	89
Male	76	79	88
Family income level			
Poor	78	DNA	DNA
Near poor	78	DNA	DNA
Middle/high income	77	DNA	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for no alcohol use and no illicit drug use are displayed to further characterize the issue.

26-10b. Reduce the proportion of adolescents reporting use of marijuana during the past 30 days.

Target: 0.7 percent.

Baseline: 9.4 percent of adolescents aged 12 to 17 years reported marijuana use in past 30 days in 1997.

Target setting method: Better than the best (consistent with the Office of National Drug Control Policy).

Data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

Adolescents Aged 12 to 17 Years, 1997	Use of Marijuana in Past 30 Days Percent
TOTAL	9.4
Race and ethnicity	
American Indian or Alaska Native	3.8
Asian or Pacific Islander	0.8
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	9.2
White	9.5
Hispanic or Latino	8.4
Not Hispanic or Latino	9.5
Black or African American	9.1
White	9.8
Gender	
Female	8.4
Male	10.3
Family income level	
Poor	DNA
Near poor	DNA
Middle/high income	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

26-10c. Reduce the proportion of adults using any illicit drug during the past 30 days.

Target: 3.0 percent.

Baseline: 5.8 percent of adults aged 18 years and older used any illicit drug during the past 30 days in 1997.

Target setting method: Better than the best (consistent with Office of National Drug Control Policy).

Data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

Adults Aged 18 Years and Older, 1997	**Illicit Drug Use in Past 30 Days** Percent
TOTAL	5.8
Race and ethnicity	
American Indian or Alaska Native	11.3
Asian or Pacific Islander	3.4
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	7.1
White	5.7
Hispanic or Latino	5.1
Not Hispanic or Latino	DNA
Black or African American	DNA
White	DNA
Gender	
Female	3.8
Male	8.1
Education level	
Less than high school	6.9
High school graduate	6.0
At least some college	5.4

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Past-month use of any illicit drug and marijuana was about the same in 1997 as in 1996 and most of the 1990s for adults aged 18 years and older.[82] But young adults aged 18 to 25 years continued to be the age group with the highest rates of use.

Past-month use of drugs increased among adolescents aged 12 to 17 years, and the 1997 rates of past month use of any illicit drug (11 percent) and marijuana (9 percent) were significantly higher than the 1996 rates of use by this age group (9 percent and 7 percent, respectively). Furthermore, past-month use of illicit drugs by youths was significantly higher in 1997 than at any time during the 4 years between 1991 and 1994. Past-month use of alcohol was about the same in 1997 as in 1996.[82]

The first goal of the 1998 National Drug Control Strategy is to "educate and enable America's youth to reject illegal drugs as well as the underage use of alcohol and tobacco."[83] In response to this goal, specific targets for the reduction of drug use among adolescents aged 12 to 17 years have been established under the Youth Substance Abuse Prevention Initiative (YSAPI). These targets, which have a baseline of 1996 and goals for the year 2002 (7 years), are as follows:

- Reverse the upward trend and reduce past-month use of marijuana among adolescents aged 12 to 17 years by 20 percent (1996 baseline: 7.1 percent; target: 5.7 percent in 2002).
- Reduce past-month use of any illicit drugs among adolescents aged 12 to 17 years by 20 percent (1996 baseline: 9.0 percent; target: 7.2 percent in 2002).
- Reduce past-month use of alcohol among adolescents aged 12 to 17 years by 10 percent (1996 baseline: 18.8 percent; target: 16.9 percent in 2002).

These targets were used as the basis for identifying Healthy People 2010 objectives.

Adopting a multicomponent approach to youth substance abuse prevention may increase the long-term effectiveness of prevention efforts. This approach includes focusing on mobilizing and leveraging resources, raising public awareness, and countering pro-use messages. Several strategies may be effective, such as increasing the involvement of parents and parent groups at the local level, increasing the number of adult volunteers involved in drug prevention at the local level, changing normative attitudes among youth from "everyone's using drugs" to "everyone has better things to do than drugs," and increasing the proportion of youth participating in positive skill-building activities.

26-11. Reduce the proportion of persons engaging in binge drinking of alcoholic beverages.

Target and baseline:

Objective	Reduction in Students Engaging in Binge Drinking During Past 2 Weeks	1998 Baseline	2010 Target
		Percent	
26-11a.	High school seniors	32	11
26-11b.	College students	39	20

Target setting method: Better than the best.

Data source: Monitoring the Future Study, NIH, NIDA.

High School Seniors and College Students, 1998	Binge Drinking Past 2 Weeks 26-11a. High School Seniors	 26-11b. College Students
	Percent	
TOTAL	32	39
Race and ethnicity		
American Indian or Alaska Native	DSU	DSU
Asian or Pacific Islander	DNC	DNC
Asian	DSU	DSU
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	12	DNA
White	36	DNA
Hispanic or Latino	28	DSU
Not Hispanic or Latino	DNC	DNC
Black or African American	DNC	DNC
White	DNC	DNC
Gender		
Female	24	31
Male	39	52
Family income level		
Poor	DNC	DNC
Near poor	DNC	DNC
Middle/high income	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Target and baseline:

Objective	Reduction in Adults and Adolescents Engaging in Binge Drinking During Past Month	1997 Baseline	2010 Target
		Percent	
26-11c.	Adults aged 18 years and older	16	6
26-11d.	Adolescents aged 12 to 17 years	8.3	3.0

Target setting method: Better than the best.

Data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

Select Age Groups Engaging in Binge Drinking During Past Month, 1997	**26-11c. Adults Aged 18 Years and Older**	**26-11d. Adolescents Aged 12 to 17 Years**
	Percent	
TOTAL	16	8.3
Race and ethnicity		
American Indian or Alaska Native	22	DSU
Asian or Pacific Islander	7	DSU
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	DNA	DNA
White	DNA	DNA
Hispanic or Latino	18	7.4
Not Hispanic or Latino	DNA	DNA
Black or African American	12	3.9
White	17	9.3
Gender		
Female	8	6.8
Male	25	9.3
Family income level		
Poor	15	DNA
Near poor	15	DNA
Middle/high income	17	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Binge drinking is a national problem, especially among males and young adults. Nearly 15 percent of persons 12 or older reported binge drinking in the past 30 days, with young adults aged 18 to 25 years more likely (27 percent) than all other age groups to have engaged in binge drinking. In all age groups, more males than females engaged in binge drinking: among adults, the ratio was two or three to one. Rates of binge drinking varied little by educational attainment. People with some college, however, were more likely than those with less than a high school education to binge drink.

The perceived acceptance of problematic drug-using behavior among family, peers, and society influences an adolescent's decision to use or avoid alcohol, tobacco, and drugs.[12] The perception that alcohol use is socially acceptable correlates with the fact that more than 80 percent of American youth consume alcohol before their 21st birthday, whereas the lack of social acceptance of other drugs correlates with comparatively lower rates of use. Similarly, widespread societal expectations that young persons will engage in binge drinking may encourage this highly dangerous form of alcohol consumption.[5]

Passage of higher minimum purchase ages for alcoholic beverages during the mid-1980s reduced but did not eliminate under aged drinking.[50] Many States are examining the use of additional restrictions and penalties for alcoholic beverage retailers to ensure compliance with the minimum purchase age.

To address the problem of binge drinking and reduce access to alcohol by underaged persons, several additional policies and strategies may be effective, including:

- Tougher State restrictions and penalties for alcoholic beverage retailers to ensure compliance with the minimum purchase age.

- Restrictions on the sale of alcoholic beverages at recreational facilities and entertainment events where minors are present.

- Improved enforcement of State laws prohibiting distribution of alcoholic beverages to anyone under age 21 years and more severe penalties to discourage distribution to underaged persons.

- Implementation of server training and standards for responsible hospitality.[84, 85] (Management and server training educates waitresses, waiters, bartenders, and supervisory staff on ways to avoid serving alcohol to minors and intoxicated persons). States could require periodic server training or use the regulatory authority of alcohol distribution licensing to mandate a minimal level of training for individual servers.

- Institution of a requirement that college students reporting to student health services following a binge drinking incident receive an alcohol screening that would identify the likelihood of a health risk. An alcohol screening would provide student health services with the information needed to assess the student's drinking and refer the student to an appropriate intervention.

- Restrictions on marketing to underaged populations, including limiting advertisements and promotions. Although alcohol advertising has been found to have little or no effect on overall consumption,[86, 87] this strategy may reduce the demand that results in illicit purchase or binge consumption.
- Higher prices for alcoholic beverages. Higher prices are associated with reductions in the probability of frequent beer consumption by young persons[45] and in the probability of adults drinking five or more drinks on a single occasion.[46]

Binge drinking among women of childbearing age (defined as 18 to 44 years) also is a problem because of the risk for prenatal alcohol exposures. Approximately half of the pregnancies in the United States are unintended,[88] and most women do not know they are pregnant until after the sixth week of gestation.[89] Such prenatal alcohol exposures can result in fetal alcohol syndrome and other alcohol-related neurodevelopmental disorders.[90]

26-12. Reduce average annual alcohol consumption.

Target: 2 gallons.

Baseline: 2.19 gallons of ethanol per person aged 14 years and older were consumed in 1996.

Target setting method: 9 percent improvement.

Data source: Alcohol Epidemiologic Data System (AEDS), NIH, NIAAA.

Annual estimates of per capita consumption for persons aged 14 years and over provide a valuable means for monitoring trends in U.S. alcohol consumption. These estimates are based on population figures as they relate to information on beverage sales, tax receipt data, or both. The data come primarily from States, with some data provided by beverage industry sources.

An overall downward trend in per-person ethanol consumption, after a peak in 1981 of 2.76 gallons, masks substantial differences in consumption trends for different types of alcoholic beverages. Per-person consumption of beer, wine, and distilled spirits declined during the 1990s. The sharpest decline occurred for distilled spirits, down by more than 40 percent since its peak in the 1970s. The downward trend in alcohol consumption can be attributed to a variety of factors, including changing lifestyles and heightened awareness of the health and safety risks of excessive alcohol consumption.

Consumption of alcohol can be influenced by laws and regulations, particularly minimum drinking age laws[91] and those that affect the prices of alcoholic beverages. A substantial and growing body of economic research has established that consumption of beer, wine, and distilled spirits declines in response to increases in the prices or taxes associated with these beverages.[11] Most studies have found that demand for beer is less responsive to price changes than are demands for wine or distilled spirits. In addition, evidence suggests important differences in the price responsiveness of light, moderate, and heavy drinkers. The heaviest-drinking 5 percent of drinkers (who report about four or more standard drinks per day and consume 36 percent of all alcohol)[46] and heavy drinkers who are ill-informed about health problems associated with heavy drinking[52] may not respond significantly to price changes. These findings suggest the importance of using a range of effective prevention and treatment interventions.

26-13. Reduce the proportion of adults who exceed guidelines for low-risk drinking.

Target and baseline:

Objective	Reduction in Adults Exceeding Guidelines for Low-Risk Drinking	1992 Baseline	2010 Target
		Percent	
26-13a.	Females	72	50
26-13b.	Males	74	50

Target setting method: Better than the best.

Data source: National Longitudinal Alcohol Epidemiologic Survey, NIH, NIAAA.

Current Drinkers Aged 21 Years and Older, 1992	26-13a. Females Exceeding Guideline	26-13b. Males Exceeding Guideline
	Percent	
TOTAL	72	74
Race and ethnicity		
American Indian or Alaska Native	85	97
Asian or Pacific Islander	64	53
Asian	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC
Black or African American	65	75
White	72	74

Current Drinkers Aged 21 Years and Older, 1992	26-13a. Females Exceeding Guideline	26-13b. Males Exceeding Guideline
	Percent	
Hispanic or Latino	72	80
Not Hispanic or Latino	72	74
Black or African American	65	74
White	72	74
Education level		
Less than high school	72	75
High school graduate	73	78
At least some college	71	72

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Males may be at risk for alcohol-related problems if they drink more than 14 drinks per week or more than 4 drinks per occasion.[92] Females may be at risk if they drink more than seven drinks per week or more than three drinks per occasion.[92] (A drink is defined as 0.54 ounces of ethanol—about the amount of alcohol in 12 ounces of regular beer, 5 ounces of wine, or 1.5 ounces of 80-proof distilled spirits.) Most persons who exceed these guidelines do so by drinking more than the specified maximum number of drinks per occasion at least once a year. Drinking more than the per-occasion maximum impairs mental performance and physical coordination, increasing the risk of injury.

Guidelines for males and females differ in part because females metabolize alcohol less efficiently than males (so they are at greater risk for some health problems than males who drink the same amount). Females also have less body water than males, so they become more intoxicated than males after drinking the same amount of alcohol.[93] Both males and females have less body water as they age. Older persons can lower their risk of alcohol problems by drinking no more than one drink a day.[94]

Some persons should not drink any alcohol.[92, 95] They include:

- Children and adolescents.
- Females who are pregnant or considering pregnancy.
- Persons who are alcohol dependent.
- Persons with health problems (for example, ulcers) that may be made worse by drinking alcohol.

- Persons who are taking prescription or over-the-counter drugs that interact with alcohol.

- Persons who plan to drive or engage in other activities requiring attention or skill.

26-14. Reduce steroid use among adolescents.

Target and baseline:

Objective	Reduction in Steroid Use Among Adolescents in Past Year	1998 Baseline	2010 Target
		Percent	
26-14a.	8th graders	1.2	0.4
26-14b.	10th graders	1.2	0.4
26-14c.	12th graders	1.7	0.4

Target setting method: Better than the best.

Data source: Monitoring the Future Study, NIH, NIDA.

Adolescents, 1998	**Steroid Use in Past Year** **26-14a. 8th Graders**	 **26-14b. 10th Graders**	 **26-14c. 12th Graders**
		Percent	
TOTAL	1.2	1.2	1.7
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DNC	DNC	DNC
Asian	DSU	DSU	DSU
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	0.7	0.5	0.9
White	1.1	1.3	1.5
Hispanic or Latino	1.4	1.2	2.4
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC

Adolescents, 1998	Steroid Use in Past Year 26-14a. 8th Graders	 26-14b. 10th Graders	 26-14c. 12th Graders
	Percent		
Gender			
Female	0.7	0.6	0.3
Male	1.6	1.9	2.8

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The self-administration by athletes of so-called performance-enhancing substances has led to risky injection practices. These substances include steroids and over-the-counter stimulant drugs and herbs, with steroids the most common. Nonmedical use of steroids poses serious problems since such use is illegal and dangerous. Behavioral and health problems associated with steroid use include suicides, homicides, liver damage, and heart attacks.[illegible]

Many substance abuse researchers believe that attempts to enhance athletic performance with steroids and other substances reduce the perceived negative consequences of substance abuse and increase the likelihood of using illicit drugs for other purposes. In addition, limited access to needles and other equipment results in a high rate of needle-sharing among adolescent teammates who inject performance-enhancing substances. While steroid use by male athletes has attracted the most attention, information suggests that adolescent females are increasing their use of steroids.[illegible]

26-15. Reduce the proportion of adolescents who use inhalants.

Target: 0.7 percent.

Baseline: 4.4 percent of adolescents aged 12 to 17 years used inhalants in the past year in 1997.

Target setting method: Better than the best.

Data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

Adolescents Aged 12 to 17 Years, 1997	**Inhalant Use in Past Year** Percent
TOTAL	4.4
Race	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	DNA
White	DNA
Hispanic or Latino	3.7
Not Hispanic or Latino	DNA
Black or African American	1.0
White	5.2
Gender	
Female	4.5
Male	4.4
Family income level	
Poor	DNA
Near poor	DNA
Middle/high income	DNA
Regions	
Northeast	2.9
North central	3.4
South	4.2
West	7.1

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Approximately 12.3 million, or 6.0 percent, of the 216 million persons surveyed in 1997 reported lifetime inhalant use.[97] About 2.3 million persons (1 percent) used inhalants in the past year, and 883,000 persons (0.4 percent) used them in the past month. Among adolescents aged 12 to 17 years between 1996 and 1997, there was a significant increase in the lifetime rate of inhaling gasoline or lighter fluid fumes (from 1.9 percent in 1996 to 2.7 percent in 1997), spray paint (from 1.4 percent in 1996 to 2.2 percent in 1997), and anesthetics, such as ether (0.2 percent in 1996 to 0.4 percent in 1997). Among adolescents, there were no significant differences between males and females in the use of inhalants.

Overall, important age, racial and ethnic, and regional differences were found in the number of cases of inhalant use in 1997. Current use was highest among adolescents aged 12 to 17 years, whereas lifetime use was highest among the 18- to 25-year age group. For both lifetime and past-year use, whites were more likely to report lifetime inhalant use than either African Americans or Hispanics. Hispanics reported higher rates than African Americans. Respondents living in metropolitan areas were significantly more likely to have used inhalants in the past year than those living in nonmetropolitan areas. Respondents in the West reported significantly higher levels of past-year inhalant use than did those in all other regions.[18]

Risk of Substance Use and Abuse

26-16. Increase the proportion of adolescents who disapprove of substance abuse.

Target and baseline:

Objective	Increase in Adolescents Who Disapprove of Having One or Two Alcoholic Drinks Nearly Every Day	1998 Baseline	2010 Target
		Percent	
26-16a.	8th graders	77	83
26-16b.	10th graders	75	83
26-16c.	12th graders	69	83

Target setting method: Better than the best.

Data source: Monitoring the Future Study, NIH, NIDA.

Adolescents, 1998	Disapproval of Daily Alcohol Drinking		
	26-16a. 8th Graders	26-16b. 10th Graders	26-16c. 12th Graders
	Percent		
TOTAL	77	75	69
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DNC	DNC	DNC
Asian	DSU	DSU	DSU
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC

Adolescents, 1998	Disapproval of Daily Alcohol Drinking 26-16a. 8th Graders	 26-16b. 10th Graders	 26-16c. 12th Graders
		Percent	
Black or African American	80	80	82
White	77	74	66
Hispanic or Latino	72	75	77
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Gender			
Female	73	68	58
Male	82	81	80
Family income level			
Poor	DNC	DNC	DNC
Near poor	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Target and baseline:

Objective	Increase in Adolescents Who Disapprove of Trying Marijuana or Hashish Once or Twice	1998 Baseline	2010 Target
		Percent	
26-16d.	8th graders	69	72
26-16e.	10th graders	56	72
26-16f.	12th graders	52	72

Target setting method: Better than the best.

Data source: Monitoring the Future Study, NIH, NIDA.

Adolescents, 1998	Disapprove of Trying Marijuana or Hashish		
	26-16d. 8th Graders	**26-16e. 10th Graders**	**26-16f. 12th Graders**
		Percent	
TOTAL	69	56	52
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DNC	DNC	DNC
Asian	DSU	DSU	DSU
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	71	61	59
White	69	53	48
Hispanic or Latino	64	59	61
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Gender			
Female	71	57	55
Male	68	55	47
Family income level			
Poor	DNC	DNC	DNC
Near poor	DNC	DNC	DNC
Middle/high income	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Disapproval of substance abuse is inversely related to adolescents' reports of use. For example, multi-year tracking of the results of the Monitoring the Future Study indicates that marijuana use among youth declines as the percentage of youth expressing disapproval of the drug increases. Similarly, an increase in marijuana use among youth during the early 1990s coincided with an apparent decline in the percentage of parents and peers expressing strong disapproval.[97]

26-17. Increase the proportion of adolescents who perceive great risk associated with substance abuse.

Target and baseline:

Objective	Increase in Adolescents Aged 12 to 17 Years Perceiving Great Risk Associated With Substance Abuse	1997 Baseline	2010 Target
		Percent	
26-17a.	Consuming five or more alcoholic drinks at a single occasion once or twice a week	47	80
26-17b.	Smoking marijuana once per month	31	80
26-17c.	Using cocaine once per month	54	80

Target setting method: Better than the best (consistent with Office of National Drug Control Policy).

Data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

Adolescents Aged 12 to 17 Years, 1997	Perceived Risk From		
	26-17a. Alcohol	26-17b. Marijuana	26-17c. Cocaine
		Percent	
TOTAL	47	31	54
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNA	DNA	DNA
White	DNA	DNA	DNA
Hispanic or Latino	49	35	53
Not Hispanic or Latino	DNA	DNA	DNA
Black or African American	54	35	65
White	44	29	53

Adolescents Aged 12 to 17 Years, 1997	Perceived Risk From 26-17a. Alcohol	 26-17b. Marijuana	 26-17c. Cocaine
		Percent	
Gender			
Female	51	32	54
Male	43	30	55
Family income level			
Poor	DNA	DNA	DNA
Near poor	DNA	DNA	DNA
Middle/high income	DNA	DNA	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The perception of risk in using illegal drugs is an important factor in decreasing drug use. As perception of harmfulness decreases, use tends to increase.[18] Therefore, youth need to be informed of the many risks, such as HIV infection, associated with use of alcohol, tobacco, and illegal drugs. (See Focus Area 27. Tobacco Use.) People who use or abuse drugs or alcohol sometimes reported being so high or intoxicated that they forgot to use a condom.[18] Therefore, informing youth about the connection between substance use and abuse and other problem behaviors, such as nonsafe sex, dating violence, and suicide, is important.

The percentage of adolescents aged 12 to 17 years who perceive great risk associated with substance abuse is on the decline.[18] The percentage perceiving great risk in using marijuana once a month decreased from 40 percent (1990) to 33 percent (1994-96). The percentage of youth perceiving great risk in using cocaine once a month decreased from 63 percent in 1994 to 54 percent in 1996. Perception of risk in having five or more drinks once or twice a week decreased from 58 percent in 1992 to 45 percent in 1996.[18]

The attitude of influential adults about alcohol and drugs is another critical predictor of attitudes in youth. Many adults who have regular contact with youth communicate ambivalent messages about alcohol and drug use.[98] In addition, more than 11 million children and adolescents under age 18 years have at least one parent who is addicted to alcohol or drugs.[99] As a result, the messages about harm and risk that they receive are sometimes impacted by family dynamics and denial. Risk and harm messages targeted to youth must therefore take this into account.

Treatment for Substance Abuse

26-18. (Developmental) Reduce the treatment gap for illicit drugs in the general population.

Potential data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

The treatment gap is the difference between the number of persons who need treatment for the use of illicit drugs and the number of persons who are receiving treatment in a given year. Despite the widely acknowledged problem of drug abuse in the United States, accepted estimates of the number of persons who need treatment and the number who receive treatment are not available.[100, 101] It is estimated that 5.3 million persons are most in need of treatment.[77] National efforts are underway to estimate better the size of the gap, to develop strategies to expand capacity, and to eliminate barriers to access for those in need. These strategies involve seeking changes in financial barriers created by funding constraints and inadequate health and disability insurance coverage[102] and improvements in gender-specific and culturally appropriate treatment methods.[103]

Strategies address the specific and unique needs of select populations, including adolescents,[104] females, and elderly persons.[105]

26-19. (Developmental) Increase the proportion of inmates receiving substance abuse treatment in correctional institutions.

Potential data source: Uniform Facilities Data Set Survey of Correctional Facilities, OAS, SAMHSA.

Much attention has been focused on the link between substance abuse and criminality, in part because of the large increase in the number of individuals incarcerated for drug-related offenses, such as possession, trafficking, and crimes of violence. In general, criminal offenders frequently have high occurrences of a substance abuse history, may or may not have previously received treatment, and without treatment have a greater likelihood of committing a criminal offense.[106, 107, 108]

26-20. Increase the number of admissions to substance abuse treatment for injection drug use.

Target: 200,000 admissions.

Baseline: 167,960 admissions for injection drug use in 1997.

Target setting method: 19 percent improvement.

Data source: Treatment Episodes Data System, OAS, SAMHSA.

The 167,960 admissions to treatment for injection drug use indicates a large unmet need for treatment in this group, because estimates of injection drug users in the Nation are as high as 810,000.[83] Better data are needed on this group's need for treatment. Because of the consequences associated with HIV/AIDS, injection drug users are a high priority population group needing substance abuse treatment. HIV infection among females and infants in the United States can be traced primarily to contaminated drug "works" and to sexual relations with infected drug users. Pediatric AIDS is a particularly virulent problem among the children of persons involved in drug-related lifestyles. To address these problems, substance abuse treatment must be provided for injection drug users. Such treatment will be most effective against HIV if it includes information, counseling, and other assistance on how to prevent HIV and unintended pregnancy.

26-21. (Developmental) Reduce the treatment gap for alcohol problems.

Potential data source: Office of Applied Studies, SAMHSA.

Although alcohol problems are diverse and vary along many dimensions, they can be described in part by their duration (acute, intermittent, chronic) and severity (mild, moderate, substantial, severe).[110] As with illicit drugs, availability of resources and access to clinically appropriate and effective treatment for alcohol problems are limited.[11, 110] The size of the gap is not well defined. Wide variability exists among jurisdictions in total treatment capacity and in how that capacity is distributed among settings and modalities.[11, 110]

Increasing the availability of treatment for alcohol problems is critical because of the pervasive impact these problems have on all aspects of society.[111, 112] Alcohol problems have an effect on such important components of human capital as level of school attainment, work experience, health status, and family structure. Strategies to be employed here are similar to those needed to improve access to appropriate primary, rehabilitative, and long-term care through addressing the many barriers that exist at multiple levels.[113] Key patient-level barriers include lack of knowledge or skepticism about the effectiveness of treatment and lack of money or insurance coverage to pay for treatment. System-level barriers include lack of trained personnel, stigma, lack of health and disability insurance coverage, and inadequate reimbursement for clinically necessary services through public funding mechanisms such as the Substance Abuse Prevention and Treatment Services Block Grant and Medicaid.[114, 115]

State and Local Efforts

26-22. (Developmental) Increase the proportion of persons who are referred for followup care for alcohol problems, drug problems, or suicide attempts after diagnosis or treatment for one of these conditions in a hospital emergency department.

Potential data source: National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

Alcohol problems, drug problems, and suicide attempts frequently cause ED visits, but these conditions may be overlooked during the visit or inadequately addressed when plans for followup are made. Some ED patients are treated for physical manifestations of alcohol problems, drug problems, or suicide attempts and released without appropriate evaluation, treatment, or referral for underlying behavioral risk factors that may cause a repeat ED visit.[116] These risk factors include hazardous patterns of alcohol consumption, use of illicit drugs, and predisposition to suicidal thoughts or actions. The effectiveness of ED interventions for these risk factors is determined by how well the affected patients are evaluated and treated in the ED and by the extent of communication and coordination with other settings and organizations in the community.[117] EDs are strategically well-positioned to ensure appropriate referrals for followup care, but underlying behavioral risk factors must be identified and appropriate followup services must be available.

26-23. (Developmental) Increase the number of communities using partnerships or coalition models to conduct comprehensive substance abuse prevention efforts.

Potential data source: Community Partnerships Data, SAMHSA.

A comprehensive program of interventions at the community level is crucial to effective substance abuse prevention.[118, 119] Such programs enable communities to address issues related to their environments, not just their at-risk populations. Improving the environment means changing local ordinances and policies, coordinating local prevention services, increasing resident participation, communicating with the local media on how they portray local communities, and addressing numerous other conditions. Because of the diversity of communities, no single partnership model is expected to be the sole model used. However, desirable procedures and practices, such as how a community should get mobilized, are now being promoted.[119]

A recent 48-community study shows that community partnerships that showed statistically significant reductions in substance abuse shared a number of common characteristics. These include: a communitywide vision that reflects the consensus of diverse groups and citizens throughout the community; a strong core of community partners; an inclusive, broad membership of organizations from all parts of the community; an ability to avoid or resolve conflict; decentralized groups that implement a large number of locally tailored prevention programs that effectively target local causes of drug use and empower residents to take action and make decisions; low staff turnover; and extensive prevention activities and support for improvements in local prevention policies.[120]

26-24. Extend administrative license revocation laws, or programs of equal effectiveness, for persons who drive under the influence of intoxicants.

Target: All States and the District of Columbia.

Baseline: 41 States and the District of Columbia had administrative license revocation laws for persons who drive under the influence of intoxicants in 1998.

Target setting method: Total coverage.

Data source: DOT, NHTSA.

Administrative license revocation (ALR) has proven to be a successful deterrent to driving while under the influence of intoxicants. ALR laws provide for administrative action separate from the judicial process that follows when a person is arrested for driving under the influence of alcohol or drugs. Colorado, Illinois, Maine, New Mexico, North Carolina, and Utah observed significant reductions in alcohol-related fatal crashes following the implementation of ALR laws. A 1991 study examined the costs and benefits of the procedure and found that reinstatement fees assessed to offenders more than covered the expenses of the program and that States also benefitted from the cost savings of fewer nighttime crashes. Another study found that ALR reduced fatal crashes an average of 9 percent during late-night hours when drivers are most likely to have been drinking alcohol. As a result of an ALR publicity campaign, the rate of fatal crashes during late-night hours was further reduced.[121]

26-25. Extend legal requirements for maximum blood alcohol concentration levels of 0.08 percent for motor vehicle drivers aged 21 years and older.

Target: All States and the District of Columbia.

Baseline: 16 States had legal requirements for maximum blood alcohol concentration levels of .08 percent for motor vehicle drivers aged 21 years and older in 1998.

Target setting method: Total coverage.

Data source: DOT, NHTSA.

More than 80 percent of the drivers involved in fatal crashes had blood alcohol concentration (BAC) levels exceeding 0.08 percent. An average man weighing

170 pounds must consume in 1 hour more than four drinks on an empty stomach to reach a 0.08 BAC level.[122] Most States that have enacted 0.08 BAC legislation experienced significant decreases in alcohol-related fatal crashes. For example, a 12 percent reduction in alcohol-related fatalities occurred in California in 1990, the year 0.08 legislation and an ALR law went into effect.[122]

As of August 1998, 50 States and the District of Columbia had established BAC cutoff levels of 0.00, 0.01, or 0.02 to define driving under the influence for individuals under age 21 years. A zero tolerance law makes driving with any measurable amount of alcohol in the blood illegal for persons under age 21 years. Because young drivers place such a high value on their driver's licenses, the threat of license revocation has proved to be an effective sanction for this age group.[122]

Related Objectives From Other Focus Areas

1. Access to Quality Health Services

1-1. Persons with health insurance
1-2. Health insurance coverage for clinical preventive services
1-3. Counseling about health behaviors
1-4. Source of ongoing care
1-5. Usual primary care provider
1-6. Difficulties or delays in obtaining needed health care
1-7. Core competencies in health provider training
1-8. Racial and ethnic representation in the health professions
1-10. Delay or difficulty in getting emergency care
1-11. Rapid prehospital emergency care
1-12. Single toll-free number for poison control centers
1-13. Trauma care systems
1-14. Special needs of children

3. Cancer

3-10. Provider counseling about preventive measures

6. Disability and Secondary Conditions

6-2. Feelings and depression among children with disabilities

7. Educational and Community-Based Programs

7-1. High school completion
7-2. School health education
7-3. Health-risk behavior information for college and university students
7-4. School nurse-to-student ratio
7-5. Worksite health promotion programs
7-6. Participation in employer-sponsored health promotion activities
7-7. Patient and family education
7-8. Satisfaction with patient education
7-9. Health care organization sponsorship of community health promotion activities
7-10. Community health promotion programs

7-11. Culturally appropriate community health promotion programs

7-12. Older adult participation in community health promotion activities

9. Family Planning

9-8. Abstinence before age 15 years

9-9. Abstinence among adolescents aged 15 to 17 years

9-10. Pregnancy prevention and sexually transmitted disease protection

9-11. Pregnancy prevention education

9-12. Problems in becoming pregnant and maintaining a pregnancy

13. HIV

13-3. AIDS among persons who inject drugs

13-4. AIDS among men who have sex with men and who inject drugs

13-8. HIV counseling and education for persons in substance abuse treatment

13-12. Screening for STDs and immunization for hepatitis B

13-13. Treatment according to guidelines

14. Immunization and Infectious Diseases

14-28. Hepatitis B vaccination among high-risk groups

15. Injury and Violence Prevention

15-10. Emergency department visits

15-13. Deaths from unintentional injuries

15-14. Nonfatal unintentional injuries

15-15. Deaths from motor vehicle crashes

15-16. Pedestrian deaths

15-17. Nonfatal motor vehicle injuries

15-18. Nonfatal pedestrian injuries

15-29. Drownings

15-32. Homicides

15-37. Physical assaults

16. Maternal, Infant, and Child Health

16-17. Prenatal substance exposure

16-18. Fetal alcohol syndrome

17. Medical Product Safety

17-3. Provider review of medications taken by patients

18. Mental Health and Mental Disorders

18-6. Primary care screening and assessment

18-10. Treatment for both co-occurring disorders

18-13. State plans addressing cultural competence

23. Public Health Infrastructure

23-2. Public access to information and surveillance data

23-3. Use of geocoding in health data systems

23-4. Data for all population groups

23-5. Data for Leading Health Indicators, Health Status Indicators, and Priority Data Needs at Tribal, State, and local levels

23-6. National tracking of Healthy People 2010 objectives

23-7. Timely release of data on objectives

23-8. Competencies for public health workers

23-9. Training in essential public health services

23-10. Continuing education and training by public health agencies
23-11. Performance standards for essential public health services
23-12. Health improvement plans
23-14. Access to epidemiology services
23-15. Model statutes related to essential public health services
23-16. Data on public health expenditures
23-17. Prevention research

25. Sexually Transmitted Diseases

25-11. Responsible adolescent sexual behavior
25-12. Responsible sexual behavior messages on television
25-13. Hepatitis B vaccine services in STD clinics
25-14. Screening in youth detention facilities and jails

27. Tobacco Use

27-1. Adult tobacco use
27-2. Adolescent tobacco use
27-3. Initiation of tobacco use
27-4. Age at first use of tobacco
27-5. Smoking cessation by adults
27-6. Smoking cessation during pregnancy
27-7. Smoking cessation by adolescents
27-8. Insurance coverage of cessation treatment
27-9. Exposure to tobacco smoke at home among children
27-10. Exposure to environmental tobacco smoke
27-11. Smoke-free and tobacco-free schools
27-12. Worksite smoking policies
27-13. Smoke-free indoor air laws
27-14. Enforcement of illegal tobacco sales to minors laws
27-15 Retail license suspension for sales to minors
27-16. Tobacco advertising and promotion targeting adolescents and young adults
27-17. Adolescent disapproval of smoking
27-18. Tobacco control programs
27-19. Preemptive tobacco control laws
27-20. Tobacco product regulation
27-21. Tobacco tax

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Administrative license revocation (ALR): Legal procedure that allows an arresting officer to confiscate immediately the driver's license of a driver who is found with a blood alcohol concentration (BAC) at or above the legally set limit or who refuses to take a BAC test. The officer usually issues a temporary driving permit valid for a short time, often 15 to 20 days, then notifies the offender of his or her right to an administrative hearing to appeal the revocation. If there is no appeal or if revocation is upheld, the offender loses his or her driver's license for a set period (90 days in most States for a first offense and longer for subsequent offenses).

Alcohol abuse: A maladaptive pattern of alcohol use that leads to clinically significant impairment or distress,

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as manifested by one or more of the following occurring within a 12-month period: recurrent alcohol use resulting in a failure to fulfill major role obligations at work, school, or home; recurrent alcohol use in physically hazardous situations; recurrent alcohol-related legal problems; continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol. In the literature on economic costs, alcohol abuse means any cost-generating aspect of alcohol consumption. This definition differs from the clinical use of the term, which involves specific diagnostic outcomes.

Alcohol dependence: A maladaptive pattern of alcohol use that leads to clinically significant impairment or distress, as manifested by three or more of the following occurring at any time in the same 12-month period: tolerance; withdrawal; often taking alcohol in larger amounts or over a longer period than was intended; persistent desire or unsuccessful efforts to cut down or control alcohol use; spending a great deal of time in activities necessary to obtain alcohol or recover from its effects; giving up or reducing important social, occupational, or recreational activities because of alcohol use; continued alcohol use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by alcohol.

Alcohol-related crash: A motor vehicle crash in which either a driver or a nonmotorist (usually a pedestrian) had a measurable or estimated BAC of 0.01 grams per deciliter (g/dL) or above.

Binge drinking: The National Household Survey on Drug Abuse defines binge drinking as drinking five or more drinks on the same occasion on at least 1 day in the past 30 days. The Monitoring the Future Study defines binge drinking as drinking five or more drinks on the same occasion during the past 2 weeks.

Blood alcohol concentration (BAC): The amount of alcohol in the bloodstream measured as a percentage, by weight, of alcohol in the blood in grams per deciliter (g/dL). Legal intoxication has been defined by States to occur at ranges from as low as 0.05 g/dL to as high as 0.10 g/dL.

Chronic drug use: Use of any heroin or cocaine more than 10 days in the past month.

Co-occurring disorders: The simultaneous presence of two or more disorders, such as the coexistence of a mental health disorder and substance abuse problems.

Current drinkers: Persons who have consumed at least 12 drinks of any kind of alcohol in the past year.

Drug dependence: A pattern of drug use leading to clinically significant impairment or distress, as manifested by three or more of the following occurring at any time in the same 12-month period: tolerance; withdrawal; use in larger amounts or over a longer period of time than intended; persistent desire or unsuccessful efforts to cut down; spending a great deal of time in activities necessary to obtain drug(s); giving up or reducing important social, occupational, or recreational activities; continued use despite knowledge of having a persistent or recurrent physical or psychological problem.

Fatal crash: A police-reported crash involving a motor vehicle in transport on a traffic way in which at least one person dies within 30 days of the crash.

Hepatitis B and C: Viral infections of the liver spread through contact with infected blood products, injection use of drugs, and needle-sharing.

Indicated preventive interventions: Interventions targeted to reach high-risk individuals who are identified as having minimal but detectable signs or symptoms foreshadowing substance abuse or biological or familial markers indicating predisposition for substance abuse, even though they do not meet DSM-III-R diagnostic levels at the current time.

Inhalants: Fumes or gases from common household substances, such as glues, aerosols, butane, and solvents, that are inhaled to produce a high.

Injection drug use: The use of a needle and syringe to inject illicit drugs (for example, heroin, cocaine, steroids) into the vein, muscle, skin, or below the skin. Injection drug use places the user at great risk for transmitting or contracting a number of blood-borne infectious diseases, including HIV, hepatitis B, and hepatitis C.

Selective preventive interventions: Interventions targeted to individuals or a subgroup of the population whose risk of developing substance abuse is significantly higher than average. The risk may be imminent or it may be a lifetime risk. The basis may be biological, psychological, or environmental.

Substance abuse: The problematic consumption or illicit use of alcoholic beverages, tobacco products, and drugs, including misuse of prescription drugs.

Universal preventive interventions: Interventions targeted to the public or a whole population group that has not been identified on the basis of individual risk. The intervention is desirable for everyone in that group. Universal interventions have advantages in terms of cost and overall effectiveness for large populations.

References

1. McGinnis, J.M., and Foege, W.H. Actual causes of death in the United States. *Journal of the American Medical Association* 270:2207-2212, 1993.

2. Harwood, H.; Fountain, D.; and Livermore, G. *The economic costs of alcohol and drug abuse in the United States, 1992.* NIH Pub. No. 98-4327. Rockville, MD: National Institutes of Health, 1998.

3. Dawson, D.A.; Grant, B.F.; Chou, S.P.; and Pickering, R.P. Subgroup variation in U.S. drinking patterns: Results of the 1992 National Longitudinal Alcohol Epidemiologic Study. *Journal of Substance Abuse* 7:331-344, 1995.

4. National Institute on Alcohol Abuse and Alcoholism (NIAAA), unpublished data.

5. O'Malley, P.M.; Johnston, L.D.; and Bachman, J.F. Alcohol use among adolescents. *Alcohol Health and Research World* 22(2):85-93, 1998.

6. Grant, B.F., and Dawson, D.A. Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: Results from the National Longitudinal Alcohol Epidemiologic Survey. *Journal of Substance Abuse* 9:103-110, 1997.

7. Grant, B.F. The impact of a family history of alcoholism on the relationship between age at onset of alcohol use and DSM-IV alcohol dependence. *Alcohol Health and Research World* 22(2):144-148, 1998.

8. National Institute on Alcohol Abuse and Alcoholism (NIAAA). *Eighth Special Report to the U.S. Congress on Alcohol and Health.* Rockville, MD: National Institutes of Health, 1994.

9. Zakhari, S. Alcohol and the cardiovascular system: Molecular mechanisms for beneficial and harmful action. *Alcohol Health and Research World* 21(1):21-29, 1997.

10. NIAAA. Alcohol and cancer. *Alcohol Alert* No. 21. Rockville, MD: National Institutes of Health, 1993.

11. NIAAA. *Ninth Special Report to the U.S. Congress on Alcohol and Health From the Secretary of Health and Human Services.* NIH Pub. No. 97-4017. Rockville, MD: NIH, June 1997.

12. National Institutes of Health. *NIH Consensus Development Conference on Management of Hepatitis C.* Bethesda, MD: National Institutes of Health, 1997.

13. Reichmann, M.E. Alcohol and breast cancer. *Alcohol Health and Research World* 18(3):182-184, 1994.

14. Roizen, J. Issues in the epidemiology of alcohol and violence. In: Martin, S. (ed.). *Alcohol and Interpersonal Violence: Fostering Multi Disciplinary Perspectives.* NIH Pub. No. 93-3496. Rockville, MD: National Institutes of Health, 1993.

15. Strunin, L., and Hingson, R. Alcohol, drugs, and adolescent sexual behavior. *International Journal of the Addictions* 27(2):129-146, 1992.

16. Strunin, L., and Hingson, R. Alcohol use and risk for HIV infection. *Alcohol Health and Research World* 17(1):35-38, 1993.

17. U.S. Department of Transportation, National Highway Traffic Safety Administration. *Traffic Safety Facts.* Washington, DC: the Administration, 1996.

18. U.S. Department of Health and Human Services (DHHS), Substance Abuse and Mental Health Services Administration (SAMHSA). *1997 National Household Survey on Drug Abuse.* Rockville, MD: the Administration, 1997.

19. Community Epidemiology Work Group. *Epidemiological Trends in Drug Abuse: Advance Report.* Rockville, MD: National Institute on Drug Abuse, December 1998.

20. Office of National Drug Control Policy. *What America's Users Spend on Illegal Drugs, 1995-1998.* Washington, DC: U.S. Government Printing Office, 1997.

21. DHHS. *The National Structured Evaluation of Alcohol and Other Drug Abuse Prevention.* Rockville, MD: the Department, 1994.

22. DHHS. *Driving After Drug or Alcohol Use: Findings from the 1996 National*

Household Survey on Drug Abuse. Rockville, MD: Substance Abuse and Mental Health Services Administration, 1998.

23. DHHS, SAMHSA. *Analyses of Substance Abuse and Treatment Need Issues*. Rockville, MD: the Administration, 1997.

24. Garfien, R.S.; Vlahov, D.; Galai, N.; Doherty, M.C.; and Nelson, K.E. Viral infections in short-term injection drug users: The prevalence of the hepatitis C, hepatitis B, human immunodeficiency, and human T-lymphotropic virus. *American Journal of Public Health* 86:655-661, 1996.

25. Kaufman, M.J.; Levin, J.M.; Ross, M.H.; Lange, N.; Rose, S.L.; Kukes, T.J.; Mendelson, J.H.; Lukas, S.E.; Cohen, B.M.; and Renshaw, P.F. Cocaine-induced cerebral vasoconstriction detected in humans with magnetic resonance angiography. *Journal of the American Medical Association* 279:376-380, 1998.

26. Merrill, J.; Fox, K.; and Chang, H. *The Cost of Substance Abuse to America's Health Care System: Report 1. Medicaid Costs*. New York, NY: Center on Addiction and Substance Abuse, 1993.

27. Shedler, J., and Block, J. Adolescent drug use and psychological health: A longitudinal inquiry. *American Psychologist* 45(5):612-630, 1990.

28. Dishion, T.J.; Andrews, D.W.; Kavanagh, K.; and Soberman, L.H. Preventive interventions for high-risk youth: The Adolescent Transitions Program. In: Peters, R.D., and McMahon, R.J., (eds.). *Preventing Childhood Disorders, Substance Abuse and Delinquency*. Thousand Oaks, CA: Sage Publications, 1996, 184-214.

29. Kumpfer, K.L. Prevention of alcohol and drug abuse: A critical review of risk factors and prevention strategies. In: Shaffer, D.; Philips, I.; and Enzer, N. (eds.). *Prevention of Mental Disorders, Alcohol and Other Drug Use in Children and Adolescents*. Office for Substance Abuse Prevention (OSAP), Monograph 2. DHHS Pub. No. (ADM) 92-1646. Rockville, MD: the Office, 1992, 309-371.

30. Dufour, M., and Fuller, R.K. Alcohol in the elderly. *Annual Review of Medicine* 46:123-132, 1995.

31. Parsons, O.A., and Nixon, S.J. Neurobehavioral sequelae of alcoholism. *Neurological Clinics* 11(1):205-218, 1993.

32. Pentz, M.A.; Dwyer, J.H.; MacKinnon, D.P.; Flay, B.R.; Hansen, W.B.; Want, E.Y.; and Johnson, C.A. A multicommunity trial for primary prevention of adolescent drug abuse. *Journal of the American Medical Association* 261(22):3259-3266, 1989.

33. MacKinnon, D.P.; Johnson, C.A.; Pentz, M.A.; Dwyer, J.H.; Hansen, W.B.; Flay, B.R.; and Yang, Y.F.I. Mediating mechanisms in a school-based drug prevention program: First-year effects of the Midwestern Prevention Project. *Health Psychology* 10(3):164-172, 1991.

34. Dielman, T.E.; Kloska, D.D.; Leech, S.L.; Schulenberg, J.E.; and Shope, J.T. Susceptibility to peer pressure as an explanatory variable for differential effectiveness of an alcohol misuse prevention program in elementary schools. *Journal of School Health* 62(6):233-237, 1992.

35. Shope, J.T.; Copeland, L.A.; Maharg, R.; Dielman, T.; and Butchart, A.T. Assessment of adolescent refusal skills in an alcohol misuse prevention study. *Health Education Quarterly* 20(3):373-390, 1993.

36. Botvin, G.J.; Baker, E.; Dusenbury, L.; Botvin, E.M.; and Diaz, T. Long-term follow up results of a randomized drug abuse prevention trial in a white middle-class population. *Journal of the American Medical Association* 273(14):1106-1112, 1995.

37. Perry, C.L.; Williams, C.L.; Veblen-Mortenson, S.; Toomey, T.L.; Komro, K.A.; Anstine, P.S.; McGovern, P.G.; Finnegan, J.R.; Forster, J.L.; Wagenaar, A.C.; and Wolfson, M. Project Northland: Outcomes of a community wide alcohol use prevention program during early adolescence. *American Journal of Public Health* 86(7):956-965, 1996.

38. O'Malley, P.M., and Wagenaar, A.C. Effects of minimum drinking age laws on alcohol use, related behaviors and traffic crash involvement among American youth: 1976-1987. *Journal of Studies on Alcohol* 52(5):478-491, 1991.

39. Hingson, R. Prevention of drinking and driving. *Alcohol Health and Research World* 20(4):219-226, 1996.

40. Zador, P.L.; Lund, A.K.; Fields, M.; and Weinberg, K. *Fatal Crash Involvement and Laws Against Alcohol Impaired Driving*. Arlington, VA: Institute for Highway Safety, 1989.

41. Hingson, R.; Heeren, T.; and Winter, M. Lower legal blood alcohol limits for young drivers. *Public Health Reports* 109(6):738-744, 1994.

42. Hingson, R.; Heeren, T.; and Winter, M. Lowering state legal blood alcohol limits to 0.08 percent: The effect on fatal motor vehicle crashes. *American Journal of Public Health* 86(9):1297-1299, 1996.

43. Hingson, R.; McGovern, T.; Howland, J.; Hereen, T.; Winter, M.; and Zakocs, R. Reducing alcohol-impaired driving in Massachusetts: The Saving Lives Program. *American Journal of Public Health* 86(6):791-797, 1996.

44. Holder, H.D.; Saltz, R.F.; Grube, J.W.; Treno, A.J.; Reynolds, R.I.; Voas, R.B.; and Gruenewald, P.J. Summing up: lessons from a comprehensive community prevention trial. *Addiction* 92(suppl. 2): S293-S301, 1997.

45. Coate, D., and Grossman, M. Effects of alcoholic beverage prices and legal drinking ages on youth alcohol use. *Journal of Law and Economics* 31:145-171, 1988.

46. Manning, W.G.; Blumberg, L.; and Moulton, L.H. The demand for alcohol: The differential response to price. *Journal of Health Economics* 14(2):123-148, 1995.

47. Cook, P.J., and Tauchen, G. The effect of liquor taxes on heavy drinking. *Bell Journal of Economics* 13(2):379-390, 1982.

48. Chalopuka, F.J.; Saffer, H.; and Grossman, M. Alcohol-control policies and motor-vehicle fatalities. *Journal of Legal Studies* 22:161-186, 1993.

49. Ruhm, C.J. Alcohol policies and highway vehicle fatalities. *Journal of Health Economics* 15:435-454, 1996.

50. Kenkel, D.S. Drinking, driving, and deterrence: The effectiveness and social costs of alternative policies. *Journal of Law and Economics* 36(2):877-933, 1993.

51. Cook, P.J., and Moore, M.J. Economic perspectives on reducing alcohol-related violence. In: Martin, S.E. (ed.). *Alcohol and Interpersonal Violence: Fostering Multidisciplinary Perspectives*. NIAAA Research Monograph No. 24, NIH Pub. No. 93-3496. Rockville, MD: National Institutes of Health, 1993.

52. Kenkel, D.S. New estimates of the optimal tax on alcohol. *Economic Inquiry* 34:296-319, 1996.

53. Marlatt, G.A.; Baer, J.S.; and Larimer, M. Preventing alcohol abuse in college students: A harm-reduction approach. In: Boyd, G.M.; Howard, J.; and Zucker, R.A. (eds.). *Alcohol Problems among Adolescents: Current Directions in Prevention Research*. Hillsdale, NJ: Lawrence Erlbaum Associates, 1995.

54. Scribner, R.A.; MacKinnon, D.P.; and Dwyer, J.H. Relative risk of assaultive violence and alcohol availability in Los Angeles County. *American Journal of Public Health* 85:335-340, 1995.

55. Gorman, D.M.; Speer, P.W.; Labouvie, E.W.; and Subaiya, A.P. Risk of assaultive violence and alcohol availability in New Jersey. *American Journal of Public Health* 88:97-100, 1998.

56. McKirnan, D.J., and Peterson, P.L. Alcohol and drug use among homosexual men and women: Epidemiology and population characteristics. *Addictive Behaviors* 14:545-553, 1989.

57. National Highway Traffic Safety Administration. *1996 Youth Fatal Crash and Alcohol Facts*. Washington, DC: U.S. Department of Transportation, 1997.

58. Hingson, R. Prevention of drinking and driving. *Alcohol Health and Research World* 20(4): 219-226, 1996.

59. O'Malley, P.M., and Wagenaar, A.C. Effects of minimum drinking age laws on alcohol use, related behaviors and traffic crash involvement among American youth: 1976-1987. *Journal of Studies on Alcohol* 52(5):478-491, 1991.

60. Zador, P.L.; Lund, A.K.; Fields, M.; and Weinberg, K. Fatal crash involvement and laws against alcohol impaired driving. Arlington, VA: Institute for Highway Safety, 1989.

61. Hasin, D.; Grant, B.; and Harford, T. Male and female differences in liver cirrhosis mortality in the United States, 1961-1985. *Journal of Studies on Alcohol* 51:123-129, 1990.

62. Popham, R.; Schmidt, W.; and Israelstam, S. Heavy alcohol consumption and physical health problems: A review of epidemiologic evidence. In: Smart, R.G.; Cappell, H.D.; Glaser, F.B.; and Israel, Y. (eds.). *Recent Advances in Alcohol and Drug Problems*. No. 8. New York, NY: Plenum Press, 1984, 149-182.

63. Schmidt, W. Effects of alcohol consumption on health. *Journal of Public Health Policy* 1:25-40, 1980.

64. Bureau of the Census. *Statistical Abstract of the United States: 1997*, 117th Edition. Washington, DC: U.S. Department of Commerce, 1997.

65. Saadatamand, F.; Stinson, F.S.; Grant, B.F.; and Dufour, M.C. *Surveillance Report* No. 45*: Liver Cirrhosis Mortality in the United States—1970-1994*. Rockville, MD: NIAAA, Division of Biometry and Epidemiology, Alcohol Epidemiological Data System, 1997.

66. DHHS, SAMHSA, Office of Applied Studies. *Year-End 1998 Emergency Department Data from the Drug Abuse Warning Network*. Rockville, MD: SAMHSA, April 1999.

67. McCaig, L.F., and Stussman, B.J. *National*

Hospital Ambulatory Medical Care Survey: 1996 Emergency Department Summary. Advance Data From Vital and Health Statistics, No. 293. Hyattsville, MD: National Center for Health Statistics, 1997.

68. Li, G.; Keyl, P.M.; Rothman, R.; Chanmugam, A.; and Kelen, G.D. Epidemiology of alcohol-related emergency department visits. *Academic Emergency Medicine* 5(8):788-795, 1998.

69. Barnett, N.P.; Spirito, A.; Colby, S.M.; Vallee, J.A.; Woolard, R.; Lewander, W.; and Monti, P.M. Detection of alcohol use in adolescent patients in the emergency department. *Academic Emergency Medicine* 5(6):607-612, 1998.

70. Meropol, S.B.; Moscati, R.M.; Lillis, K.A.; Ballow, S.; and Janicke, D.M. Alcohol-related injuries among adolescents in the emergency department. *Annals of Emergency Medicine* 26(2):221-223, 1995.

71. Rivara, F.P.; Jurkovich, G.J.; Gurney, J.G.; Seguin, D.; Fligner C.L.; Ries, R.; Raisys, V.A.; and Copass, M. The magnitude of acute and chronic alcohol abuse in trauma patients. *Archives of Surgery* 128(8):907-912, 1993.

72. D'Onofrio, G.; Bernstein, E.; Bernstein, J.; Woolard, R.H.; Brewer, P.A.; Craig, S.A.; and Zink, B.J. Patients with alcohol problems in the emergency department, Part 1: Improving detection. SAEM Substance Abuse Task Force. Society for Academic Emergency Medicine. *Journal of the Academy of Emergency Medicine* 5(12):1200-1209, 1998.

73. DHHS, CDC. *Youth Risk Behavior Survey*. Atlanta, GA: the Centers, 1997.

74. Murdoch, D., and Ross, R.O. Alcohol and crimes of violence. *International Journal of the Addictions* 25(9):1065-1081, 1990.

75. Pacific Center for Violence Prevention. *Preventing Youth Violence: Reducing Access to Firearms*. San Francisco, CA: the Center, 1994.

76. U.S. Department of Justice, Bureau of Justice Statistics. *National Crime Victimization Survey*. Washington, DC: the Bureau, 1997.

77. Office of National Drug Control Policy, Executive Office of the President. *The National Drug Control Strategy, 1999: A Ten Year Plan*. Washington, DC: Government Printing Office, 1999.

78. U.S. Department of Justice. *National Symposium on Alcohol Abuse and Crime: Recommendations to the Office of Justice Programs*. Washington, DC: Office of Justice Programs, 1998.

79. Doherty, M.; Edberg, M.; Cohen, M.; Williams, K.; and Bekelman, A.M. The Violence Data Exchange Team: Developing a Local Data Collection Network to Monitor Community Violence. Presented at the Society for Applied Anthropology Annual Meeting in Seattle, WA, March 1997.

80. Hansen, W. School-based substance abuse prevention: A review of the state of the art curriculum, 1980-1990. *Health Education Research* 7(3):403-430, 1992.

81. Johnston, L.; O'Malley, P.; and Bachman, J. *National Survey Results on Drug Use From the Monitoring the Future Study, 1975-1995, Volume I: Secondary School Students*. Rockville, MD: National Institute on Drug Abuse, 1996.

82. DHHS, SAMHSA. *National Household Survey on Drug Abuse: Population Estimates 1996*. Rockville, MD: the Administration, 1997.

83. Office of National Drug Policy, Executive Office of the President. *The National Drug Control Strategy: 1998*. Washington, DC: Government Printing Office, 1998.

84. Saltz, R. Research needs and opportunities in server intervention programs. *Health Education Quarterly* 16(3):429-438, 1989.

85. Holder, H.D., and Wagenaar, A.C. Mandated server training and reduced alcohol-involved traffic crashes: A time series analysis of the Oregon experience. *Accident Analysis and Prevention* 26:89-97, 1994.

86. Nelson, J.P., and Moran, J.R. Advertising and United States alcoholic beverage demand: System-wide estimates. *Applied Economics* 27(12):1225-1236, 1995.

87. Saffer, H. Alcohol advertising and alcohol consumption: Econometric studies. In: Martin, S.E., and Mail, P. (eds.). *The Effects of the Mass Media on the Use and Abuse of Alcohol*. NIAAA Research Monograph No. 28. NIH Publication No. 95-3743. Bethesda, MD: National Institutes of Health, 1995.

88. Henshaw, S.K. Unintended pregnancy in the United States. *Family Planning Perspectives*, 30:24-29, 1998.

89. CDC. Unpublished data, February 1999.

90. CDC. Alcohol consumption among pregnant and childbearing-aged women, United States, 1991 and 1995. *Morbidity and Mortality Weekly Report* 46:346-350, 1997.

91. Wagenaar, A.C. Minimum drinking age and alcohol availability to youth: Issues and research needs. In: Hilton, M.E., and Bloss, G. (eds.). *Economics and the Prevention of Alcohol-Related Problems*. NIAAA Research Monograph No. 25. NIH Pub. No. 93-3513. Rockville, MD: National Institutes of Health, National Institute on Alcohol Abuse and Alcoholism, 1993.

92. NIAAA. *The Physicians' Guide to Helping Patients With Alcohol Problems*. NIH Pub. No. 95-3769. Rockville, MD: National Institutes of Health, 1995.

93. NIAAA. Alcohol and Women. *Alcohol Alert*. No. 10. Rockville, MD: National Institutes of Health, 1990.

94. Dufour, M.C.; Archer, L.; and Gordis, E. Alcohol and the elderly. Health promotion and disease prevention. *Clinics in Geriatric Medicine* 8:127-141, 1992.

95. U.S. Department of Agriculture, DHHS. *Nutrition and Your Health: Dietary Guidelines for Americans*, 4th ed. Washington, DC: Government Printing Office, 1995.

96. Yesalis, C.E.; Barsukiewicz, C.K.; Epstein, A.N.; and Bahrke, M.S. Trends in anabolic-androgenic steroid use among adolescents. *Archives of Pediatrics and Adolescent Medicine* 151(12):1197-1206, 1997.

97. DHHS, SAMHSA. *National Household Survey on Drug Abuse. Main Findings 1996*. Rockville, MD: the Administration, 1998.

98. Ellis, D.; Zucker, R.; and Fitzgerald, H. The role of family influences in development and risk. *Alcohol Health and Research World* 21(3):218-226, 1997.

99. Eigen, L., and Rowden, D.A. A methodology and current estimate of the number of children of alcoholics in the U.S. *Children of Alcoholics, Selected Readings*, 1996.

100. Woodward, A.; Einstein, J.; Gfroerre, J.; Milnick, D.; Thomson, R.; et al. The drug abuse treatment gap: Recent estimates. *Health Care Financing Review* 18(3):1-13, 1997.

101. Simeone, R.S.; Rhodes, W.R.; and Hunt, D.E. A plan for estimating the number of hardcore drug users in the United States. *The International Journal of Addictions* 30:637-657, 1995.

102. Buck, J.A., and Umland, B. Covering mental health and substance abuse services. *Health Affairs* 16:120-126, 1997.

103. Weisner, C., and Schmidt, L. Alcohol and drug problems among diverse health and social service populations. *American Journal of Public Health* 83:824-829, 1993.

104. Harrison, P.A.; Fulkerson, J.A.; and Beebe, T.J. DSM-IV substance use disorder criteria for adolescents: A critical examination based on a statewide school survey. *American Journal of Psychiatry* 155:486-492, 1998.

105. DHHS, SAMHSA, Center for Substance Abuse Treatment (CSAT). *Substance Abuse Among Older Adults*. Treatment Improvement Protocol 26. Rockville, MD: SAMHSA, 1998.

106. CSAT. *Planning for Alcohol and Other Drug Treatment for Adults in the Criminal Justice System*. Treatment Improvement Protocol 17. Rockville, MD: the Administration, 1995.

107. Mumola, C.J. *Substance Abuse and Treatment, State and Federal Prisoners, 1997*. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics, 1999.

108. Anglin, M.D., and Hser, Y. Criminal justice and the drug-abusing offender: Policy issues of coerced treatment. *Behavioral Sciences and the Law* 9:243-267, 1991.

109. Grant, B.F.; Harford, T.C.; Dawson, D.A.; Chou, P.; Dufour, M.; and Pickering, R. Prevalence of DSM-IV alcohol abuse and dependence: United States, 1992. *Alcohol Health and Research World* 18:243-248, 1994.

110. Institute of Medicine. *Broadening the Base of Treatment for Alcohol Problems*. Washington, DC: National Academy Press, 1990.

111. Harwood, H.J., Fountain, D.; and Livermore, G. *Economic Costs of Alcohol Abuse and Alcoholism. Recent Developments in Alcoholism, Volume 14: The Consequences of Alcoholism*. New York, NY: Plenum Press, 1998.

112. Sindelar, J. Social costs of alcohol. *Journal of Drug Issues* 28:763-780, 1998.

113. McCrady, B.S., and Lagenbucher, J.W. Alcohol treatment and health care system reform. *Archives of General Psychiatry* 53:737-746, 1996.

114. NIAAA. *Improving the Delivery of Alcohol Treatment and Prevention Services: A National Plan for Alcohol Services Research*. Rockville, MD: National Institutes of Health, 1997.

115. Sing, M.; Hik, S; Smolkin, S.; and Heiser, N. *The Costs and Effects of Parity for Mental Health and Substance Abuse Benefits*. Rockville, MD: Substance Abuse and Mental Health Services Administration, 1998.

116. Medical Association Commission on Emergency Medical Services. Pediatric emergencies. (Excerpt from Guidelines for Categorization of Hospital Emergency Capabilities.) *Pediatrics* 85:879-887, 1990.

117. U.S. Consumer Product Safety Commission, Division of Hazard and Injury Data Systems. *Hospital-Based Pediatric Emergency Resource Survey*. Bethesda, MD: the Commission, 1997.

118. Philips, J., and Springer, J.F. Implementation of community interventions: Lessons learned. *Secretary's Youth Substance Abuse Prevention Initiative: Resource Papers. Regional Technical Assistance Workshop Pre-Publication Documents.* Rockville, MD: Center for Substance Abuse Prevention, March 1997, 159-178.

119. Yin, R.K.; Kaftarian, S.J.; Yu, P.; and Janssen, M.A. Outcomes from CSAP's community partnership program: Findings from the National Cross-Site Evaluation. *Evaluation and Program Planning* 20:345-355, August 1997.

120. Community Partnership Program Study, Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Prevention, 1999.

121. National Highway Traffic Safety Administration. *Administrative License Revocation: State Legislative Fact Sheet*. Washington, DC: U.S. Department of Transportation, 1996.

122. National Highway Traffic Safety Administration. *0.08 BAC Illegal Per Se Level: State Legislative Fact Sheet*. Washington, DC: U.S. Department of Transportation, 1996.

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Tobacco Use

Lead Agency: Centers for Disease Control and Prevention

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Goal

Reduce illness, disability, and death related to tobacco use and exposure to secondhand smoke.

Overview

Scientific knowledge about the health effects of tobacco use has increased greatly since the first Surgeon General's report on tobacco was released in 1964.[1, 2] Cigarette smoking causes heart disease, several kinds of cancer (lung, larynx, esophagus, pharynx, mouth, and bladder), and chronic lung disease. Cigarette smoking also contributes to cancer of the pancreas, kidney, and cervix. Smoking during pregnancy causes spontaneous abortions, low birth weight, and sudden infant death syndrome.[3]

Other forms of tobacco are not safe alternatives to smoking cigarettes. Use of spit tobacco causes a number of serious oral health problems, including cancer of the mouth and gum, periodontitis, and tooth loss.[1, 4] Cigar use causes cancer of the larynx, mouth, esophagus, and lung.[5] In recent years, reports have shown an increase in the popularity of bidis.[6] Bidis are small brown cigarettes, often flavored, consisting of tobacco hand-rolled in tendu or temburni leaf and secured with a string at one end. Research shows that bidis are a significant health hazard to users, increasing the risk of coronary heart disease and cancer of the mouth, pharynx and larynx, lung, esophagus, stomach, and liver.[7]

Issues and Trends

Tobacco use is responsible for more than 430,000 deaths per year among adults in the United States, representing more than 5 million years of potential life lost.[8] If current tobacco use patterns in this Nation persist, an estimated 5 million persons under age 18 years will die prematurely from a smoking-related disease.[9] Direct medical costs related to smoking total at least $50 billion per year;[10] direct medical costs related to smoking during pregnancy are approximately $1.4 billion per year.[11]

Evidence is accumulating that shows maternal tobacco use is associated with mental retardation and birth defects such as oral clefts. Exposure to secondhand smoke has serious health effects.[12, 13, 14] Researchers have identified more than 4,000 chemicals in tobacco smoke; of these, at least 43 cause cancer in humans and animals.[15] Each year, because of exposure to secondhand smoke, an estimated 3,000 nonsmokers die of lung cancer, and 150,000 to 300,000 infants and children under age 18 months experience lower respiratory tract infections.[13, 14] Asthma and other respiratory conditions often are triggered or worsened by tobacco smoke.

(See Focus Area 8. Environmental Health; Focus Area 16. Maternal, Infant, and Child Health; and Focus Area 24. Respiratory Diseases.)

Studies also have found that secondhand smoke exposure causes heart disease among adults.[15, 16] Data reported from a study of the U.S. population aged 4 years and older indicated that among nontobacco users, 88 percent had detectable levels of serum cotinine, a biological marker for exposure to secondhand smoke.[17] Both home and workplace environments contributed to the widespread exposure to secondhand smoke. Data from a 1996 study indicated that 22 percent of U.S. children and adolescents under aged 18 years (approximately 15 million children and adolescents) were exposed to secondhand smoke in their homes.[18]

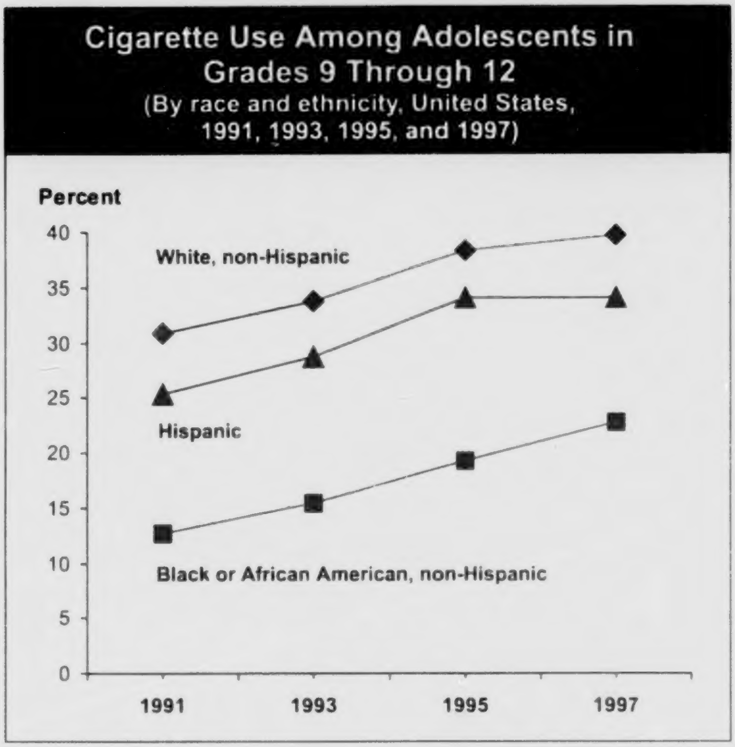
Smoking among adults declined steadily from the mid-1960s through the 1980s. However, smoking among adults appeared to have leveled off in the 1990s. The rate of smoking among adults in 1997 was 25 percent.[19]

Tobacco use and addiction usually begin in adolescence. Furthermore, tobacco use may increase the probability that an adolescent will use other drugs. (See Focus Area 26. Substance Abuse.) Among adults in the United States who have ever smoked daily, 82 percent tried their first cigarette before age 18 years, and 53 percent became daily smokers before age 18 years.[20] Preventing tobacco use among youth has emerged as a major focus of tobacco control efforts.

Tobacco use among adolescents increased in the 1990s after decreasing in the 1970s and 1980s. Data from the 1999 Monitoring the Future Study indicated that past-month smoking among 8th, 10th, and 12th graders was 18, 26, and 35 percent, respectively. These rates represented increases of 20 to 33 percent since 1991.[21] Data from the Youth Risk Behavior Survey revealed that past-month smoking among 9th to 12th graders rose from 28 percent in 1991 to 36 percent in 1997.[22] Past-month spit tobacco use among 9th to 12th graders was 9 percent in 1997 (2 percent among females and 16 percent among males).[22] In 1997, past-month cigar use among 9th to 12th graders was 22 percent (11 percent of females and 31 percent of males).[22]

Youth are put at increased risk of initiating tobacco use by sociodemographic, environmental, and personal factors. Sociodemographic risk factors include coming from a family with low socioeconomic status. Environmental risk factors range from accessibility and availability of tobacco products to cigarette advertising and promotion, price of tobacco products, perceptions that tobacco use is normal, peers' and siblings' use and approval, and lack of parental involvement. Personal risk factors include a lower self-image and lower self-esteem than peers, the belief that tobacco use provides a benefit, and the lack of ability to refuse offers to use tobacco.[20]

Overwhelming evidence indicates that nicotine found in tobacco is addictive and that addiction occurs in most smokers during adolescence.[20, 23] Among students who were high school seniors during 1976-86, 44 percent of daily smokers


Cigarette Use Among Adolescents in Grades 9 Through 12
(By race and ethnicity, United States, 1991, 1993, 1995, and 1997)

Source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP, 1991, 1993, 1995, 1997.

believed that in 5 years they would not be smoking. Followup studies, however, indicated that 5 to 6 years later 73 percent of these persons remained daily smokers.[20] In 1995, 68 percent of current smokers wanted to quit smoking completely, and 46 percent of the current daily smokers had stopped smoking for at least 1 day during the preceding 12 months.[19] Less than 3 percent of current smokers stopped smoking permanently.[24]

Disparities

Men are more likely to smoke than women (28 percent compared to 22 percent).[19] Disparities in tobacco use exist among certain racial and ethnic populations. American Indians and Alaska Natives (34 percent) are more likely to smoke than other racial and ethnic groups, with considerable variations in percentages by Tribe.[25] Hispanics (20 percent) and Asians and Pacific Islanders (17 percent) are less likely to smoke than other groups. Regional and local data, however, reveal much higher smoking levels among specific population groups of Hispanics and Asians and Pacific Islanders.[25] Smoking levels among Vietnamese and Korean Asian Americans are higher than previously reported, according to a 1997 multilingual survey.[26]

Studies have found higher levels of cigarette use among gay men and lesbians than among heterosexuals.[27, 28, 29, 30] Gay men and lesbians with higher education levels are less likely to use cigarettes as frequently as those with lower levels of education.[28]

Persons with 9 to 11 years of education (35 percent) have significantly higher levels of smoking than individuals with 8 years or less of education or 12 years or more. Individuals with 16 or more years of education have the lowest smoking rates (12 percent). Individuals below the poverty level are significantly more likely to smoke than individuals at or above the poverty level (33 percent compared to 25 percent).[19]

Data reveal high levels of tobacco use among college students. In 1995, 29 percent of college students smoked in the previous month (28 percent of females and 30 percent of males). Five percent of college students used spit tobacco in the previous month (0.3 percent of females and 12 percent of males).[31]

Among adolescents, smoking rates differ between whites and African Americans.[21, 22] By the late 1980s, smoking rates among white teens were more than triple those of African American teens. In recent years, smoking has started to increase among African American male teens, but African American female teens continue to have lower smoking rates. In 1997, 40 percent of white high school females were smokers, compared to 17 percent of African American high school females.[22]

Spit tobacco use among adolescents also differs significantly by students' gender, race, and ethnicity. In 1997, 15.8 percent of male high school students currently used spit tobacco, compared to only 1.5 percent of female high school students. Current spit tobacco use was 12.2 percent for non-Hispanic whites, 2.2 percent for non-Hispanic African Americans, and 5.1 percent for Hispanics.[22]

Opportunities

Efforts to reduce tobacco use in the United States have shifted from focusing primarily on smoking cessation for individuals to more population-based interventions. Such interventions emphasize prevention of initiation, reduction of exposure to environmental tobacco smoke, and systems changes to promote smoking cessation.[20, 32, 33, 34, 35, 36, 37] Federal, State, and local government agencies and numerous health organizations have joined together to develop and implement population-based approaches.

Community research studies and evidence from California, Florida, Massachusetts, and Oregon have shown that comprehensive programs can be effective in reducing average cigarette consumption per person. Both California and Massachusetts increased cigarette excise taxes and designated a portion of the revenues for comprehensive tobacco control programs. Data from these States indicate that (1) increasing excise taxes on cigarettes is one of the most cost-effective short-term strategies to reduce tobacco consumption among adults and to prevent initiation among youth, and (2) the ability to sustain lower consumption increases when the tax increase is combined with an antismoking campaign.[38] In addition, recent data from Florida indicate that past-month smoking decreased significantly among public middle school students (19 percent to 15 percent) and high school students (27 percent to 25 percent) from 1998 to 1999 following implementation of a comprehensive program to prevent and reduce tobacco use among youth in the State.[39]

As education programs for school-aged youth are developed and proven effective in preventing initiation and in cessation, these programs should be included in quality health education curricula at the grade level. Education should aim to prevent initiation among youth, provide knowledge about effective cessation methods, and increase understanding of the health effects of tobacco use. (See Focus Area 7. Educational and Community-Based Programs.)

The goals of comprehensive tobacco prevention and reduction efforts include preventing people from starting to use tobacco, helping people quit using tobacco, reducing exposure to secondhand smoke, and identifying and eliminating disparities in tobacco use among population groups. To address these goals, several components are being implemented: community programs, media interventions, policy and regulation, and surveillance and evaluation. Specifically, the following elements are used to build capacity to implement and support tobacco use prevention and control interventions: a focus on change in social norms and environments that support tobacco use, policy and regulatory strategies, community participation, establishment of public and private partnerships, strategic use of media, development of local programs, coordination of statewide and local activities, linkage of school-based activities to community activities, and use of data collection and evaluation techniques to monitor program impact.

The importance of these various strategic elements has been demonstrated in a number of States, such as Arizona, California, Florida, Massachusetts, and Oregon.[40] In these and other States, tobacco control programs are supported through funding from the Federal Government, private foundations, State tobacco taxes, State lawsuit settlements, and other sources. These programs address issues such as reducing exposure to secondhand smoke, restricting minors' access to tobacco, treating nicotine addiction, limiting the impact of tobacco advertising, increasing the price of tobacco products, and directly regulating the product (for example, requiring product ingredient reporting). Tobacco control programs and materials should be culturally and linguistically appropriate.

Interim Progress Toward Year 2000 Objectives

Of the 26 tobacco-related objectives, 3 have been met: reducing the rate of lung cancer deaths, reducing the rate of oral cancer deaths, and increasing the number of States that have tobacco control plans.

Sixteen additional objectives are showing progress. These include cigarette smoking among adults, which declined in the early part of the 1990s and then leveled off, and children's exposure to secondhand smoke, which declined. Some objectives, though showing progress, are far from the target. For example, although 13 States have laws limiting smoking in public places and worksites, few ban smoking or limit it to separately ventilated areas in private workplaces or restaurants. As of December 31, 1998, only one State had met the objective for private worksites, and three had met it for restaurants. All 50 States and the District of Columbia have laws prohibiting the sale of tobacco to minors. However, the objective on enforcement of minors' access laws to achieve illegal buy rates of no more than 20 percent is far from being met: in fiscal year 1998 only 12 States had met this target. Although Healthy People 2000 data indicate that smoking among adolescents is declining somewhat, other surveys have indicated that smoking among youth had risen through 1997 and remained unchanged or declined somewhat in 1998 and 1999. Two additional objectives that include use of and perception of harm with use of drugs, alcohol, and cigarettes by high school seniors show mixed progress; for cigarettes there is slight progress.

Three objectives (perception of social disapproval of cigarette smoking among adolescents, States with preemptive clean indoor air laws, and smoking cessation during pregnancy) are moving away from the targets.

Data beyond baseline were not available for two objectives (tobacco product advertising and promotion to youth, and health plans offering treatment for nicotine addiction).

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Healthy People 2010—Summary of Objectives

Tobacco Use

Goal: Reduce illness, disability, and death related to tobacco use and exposure to secondhand smoke.

Number	**Objective**
Tobacco Use in Population Groups	
27-1	Adult tobacco use
27-2	Adolescent tobacco use
27-3	Initiation of tobacco use
27-4	Age at first tobacco use
Cessation and Treatment	
27-5	Smoking cessation by adults
27-6	Smoking cessation during pregnancy
27-7	Smoking cessation by adolescents
27-8	Insurance coverage of cessation treatment
Exposure to Secondhand Smoke	
27-9	Exposure to tobacco smoke at home among children
27-10	Exposure to environmental tobacco smoke
27-11	Smoke-free and tobacco-free schools
27-12	Worksite smoking policies
27-13	Smoke-free indoor air laws
Social and Environmental Changes	
27-14	Enforcement of illegal tobacco sales to minors laws
27-15	Retail license suspension for sales to minors
27-16	Tobacco advertising and promotion targeting adolescents and young adults
27-17	Adolescent disapproval of smoking
27-18	Tobacco control programs
27-19	Preemptive tobacco control laws
27-20	Tobacco product regulation
27-21	Tobacco tax

Healthy People 2010 Objectives

Tobacco Use in Population Groups

27-1. Reduce tobacco use by adults.

Target and baseline:

Objective	Reduction in Tobacco Use by Adults Aged 18 Years and Older	1997 Baseline*	2010 Target
		Percent	
27-1a.	Cigarette smoking	24	12
27-1b.	Spit tobacco	**Developmental**	
27-1c.	Cigars	**Developmental**	
27-1d.	Other products	**Developmental**	

*Age adjusted to the year 2000 standard population.

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1997	27-1a. Cigarette Smoking Percent
TOTAL	24
Race and ethnicity	
American Indian or Alaska Native	34
Asian or Pacific Islander	16
Asian	15
Native Hawaiian and other Pacific Islander	21
Black or African American	26
White	25
Hispanic or Latino	20
Not Hispanic or Latino	25
Black or African American	26
White	25

Adults Aged 18 Years and Older, 1997	27-1a. Cigarette Smoking Percent
Gender	
Female	22
Male	27
Age	
18 to 24 years	28
25 to 44 years	28
45 to 64 years	24
65 years and older	12
Family income level	
Poor	34
Near poor	31
Middle/high income	23
Education level (aged 25 years and older)	
Less than high school	33
Less than 9 years	26
9 to 11 years	36
High school graduate	30
At least some college	18
13 to 15 years	24
16 years or more	11
Disability status	
Persons with disabilities	33
Persons without disabilities	23

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

27-2. Reduce tobacco use by adolescents.

Target and baseline:

Objective	Reduction in Tobacco Use by Students in Grades 9 Through 12	1997 Baseline	2010 Target
		Percent	
27-2a.	Tobacco products (past month)	43	21
27-2b.	Cigarettes (past month)	36	16
27-2c.	Spit tobacco (past month)	9	1
27-2d.	Cigars (past month)	22	8

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Students in Grades 9 Through 12, 1997	**Current Tobacco Use** (used cigarettes, spit tobacco, or cigars on 1 or more of the 30 days preceding the survey)		
	27-2a. Both Genders	**Females***	**Males***
	Percent		
TOTAL	43	36	48
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	37	31	41
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	29	22	38
White	47	41	52

Students in Grades 9 Through 12, 1997	**Current Tobacco Use** (used cigarettes, spit tobacco, or cigars on 1 or more of the 30 days preceding the survey)		
	27-2a. Both Genders	**Females***	**Males***
	Percent		
Grade			
9th grade	38	33	42
10th grade	41	37	44
11th grade	44	34	53
12th grade	47	40	52
Parents' education level			
Less than high school	41	36	48
High school graduate	46	41	51
At least some college	43	35	48

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

Students in Grades 9 Through 12, 1997	**Current Cigarette Smoking** (smoked cigarettes on 1 or more of the 30 days preceding the survey)		
	27-2b. Both Genders	**Females***	**Males***
	Percent		
TOTAL	36	35	38
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	34	32	36

Students in Grades 9 Through 12, 1997	Current Cigarette Smoking (smoked cigarettes on 1 or more of the 30 days preceding the survey)		
	27-2b. Both Genders	Females*	Males*
	Percent		
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	23	17	28
White	40	40	40
Grade			
9th grade	33	33	34
10th grade	35	35	36
11th grade	37	32	41
12th grade	40	39	40
Parents' education level			
Less than high school	39	37	43
High school graduate	40	39	41
At least some college	35	33	37

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

Students in Grades 9 Through 12, 1997	Current Spit Tobacco Use (used spit tobacco on 1 or more of the 30 days preceding the survey)		
	27-2c. Both Genders	Females*	Males*
	Percent		
TOTAL	9	2	16
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC

Students in Grades 9 Through 12, 1997	**Current Spit Tobacco Use** (used spit tobacco on 1 or more of the 30 days preceding the survey) **27-2c. Both Genders**	**Females***	**Males***
	Percent		
Hispanic or Latino	5	1	8
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	2	1	3
White	12	2	21
Grade			
9th grade	10	2	17
10th grade	7	1	12
11th grade	10	2	17
12th grade	11	1	18
Parents' education level			
Less than high school	8	1	18
High school graduate	9	1	17
At least some college	10	2	16

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

Students in Grades 9 Through 12, 1997	**Current Cigar Use** (smoked cigars on 1 or more of the 30 days preceding the survey) **27-2d. Both Genders**	**Females***	**Males***
	Percent		
TOTAL	22	11	31
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC

Students in Grades 9 Through 12, 1997	**Current Cigar Use** (smoked cigars on 1 or more of the 30 days preceding the survey)		
	27-2d. Both Genders	**Females***	**Males***
		Percent	
Hispanic or Latino	20	13	26
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	19	11	28
White	22	10	33
Grade			
9th grade	17	10	24
10th grade	22	12	30
11th grade	24	9	37
12th grade	24	12	33
Parents' education level			
Less than high school	19	11	29
High school graduate	21	11	32
At least some college	23	11	32

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

Effective prevention approaches for reducing tobacco use among adolescents include school-based prevention programs as an integral part of communitywide strategies that address the overall social context of tobacco use.[20, 32] School-based tobacco prevention programs identify the social influences that promote tobacco use among youth and teach skills to resist such influences. Such programs have demonstrated consistent and significant reductions or delays in adolescent smoking.[20, 55] The effects dissipate over time if they are not followed by additional educational interventions or linkages to community programs. Further studies have shown that the effectiveness of school-based tobacco prevention programs appears to be strengthened by (1) booster sessions or further application of the programs and (2) communitywide programs involving parents, school policies, mass media, youth access, and community organizations.[42, 43, 44, 45, 46, 47] A multicomponent approach to school-based tobacco use prevention[48] also may increase the long-term effectiveness of prevention efforts. (See Focus Area 7. Educational and Community-Based Programs.)

27-3. (Developmental) Reduce initiation of tobacco use among children and adolescents.

Potential data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

27-4. Increase the average age of first use of tobacco products by adolescents and young adults.

Target and baseline:

Objective	Increase in Average Age of First Tobacco Use	1997 Baseline	2010 Target
		Average Age of First Use in Years	
27-4a.	Adolescents aged 12 to 17 years	12	14
27-4b.	Young adults aged 18 to 25 years	15	17

Target setting method: Better than the best.

Data source: National Household Survey on Drug Abuse (NHSDA), SAMHSA.

Adolescents and Young Adults, 1997	First Cigarette Use 27-4a. 12 to 17 Years	 27-4b. 18 to 25 Years
	Average Age in Years	
TOTAL*	12	15
Race and ethnicity		
American Indian or Alaska Native	12	14
Asian or Pacific Islander	13	15
Black or African American	13	16
White	12	15
Hispanic or Latino	13	15
Not Hispanic or Latino*	12	15
Black or African American	12	15
White	13	16
Gender		
Female	13	15
Male	12	15

Adolescents and Young Adults, 1997	First Cigarette Use 27-4a. 12 to 17 Years	 27-4b. 18 to 25 Years
	Average Age in Years	
Family income level		
Poor	DNA	DNA
Near poor	DNA	DNA
Middle/high income	DNA	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Total excludes all race categories other than black and white.

Because tobacco use is linked with numerous adverse health outcomes, reducing tobacco use will reduce illness, disability, and death across a spectrum of conditions, including heart disease, cancer, and chronic lung disease. (See Related Objectives From Other Focus Areas section.)

Assessing the number of cases of tobacco use among both adults and adolescents is a critical element of public health surveillance. Indeed, in 1996 the Council of State and Territorial Epidemiologists added adult cigarette smoking as a notifiable condition, the first time that a behavior rather than a disease was designated a notifiable condition.[40]

Because the majority of initiation of tobacco use occurs in adolescence,[20] direct measures of tobacco use in adolescence are important health indicators. Measures of use in adulthood provide an assessment of use that has extended beyond experimentation and initiation. Evidence indicates substitution of tobacco products among both adults and youth, so measuring use of multiple products (cigarettes, spit tobacco, and cigars at a minimum) is important.

Cessation and Treatment

27-5. Increase smoking cessation attempts by adult smokers.

Target: 75 percent.

Baseline: 43 percent of adult smokers aged 18 years and older stopped smoking for a day or longer because they were trying to quit in 1997 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1997	**Stopped Smoking 1 Day or Longer Because They Were Trying To Quit** Percent
TOTAL	43
Race and ethnicity	
American Indian or Alaska Native	50
Asian or Pacific Islander	47
Asian	43
Native Hawaiian and other Pacific Islander	DSU
Black or African American	45
White	42
Hispanic or Latino	46
Not Hispanic or Latino	43
Black or African American	46
White	42
Gender	
Female	43
Male	43
Age	
18 to 24 years	50
25 to 44 years	45
45 to 64 years	39
65 years and older	36
Family income level	
Poor	46
Near poor	43
Middle/high income	43
Education level (aged 25 years and older)	
Less than high school	40
Under 9 years	40
9 to 11 years	40
High school graduate	40
At least some college	44
13 to 15 years	44
16 years or more	42

Adults Aged 18 Years and Older, 1997	Stopped Smoking 1 Day or Longer Because They Were Trying To Quit Percent
Disability status	
Persons with disabilities	44
Persons without disabilities	42

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

27-6. Increase smoking cessation during pregnancy.

Target: 30 percent.

Baseline: 12 percent smoking cessation during the first trimester of pregnancy in 1991 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Pregnant Females Aged 18 to 49 Years, 1991	Stopped Smoking Percent
TOTAL	12
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	DSU
White	11
Hispanic or Latino	DSU
Not Hispanic or Latino	12
Black or African American	DSU
White	11

Pregnant Females Aged 18 to 49 Years, 1991	Stopped Smoking Percent
Family income level	
Poor	DSU
Near poor	DSU
Middle/high income	13
Education level	
Less than 12 years	DSU
Less than 8 years	DSU
9 to 11 years	DSU
High school graduate	DSU
13 years or more	DSU
13 to 15 years	DSU
16 years or more	DSU
Disability status	
Persons with disabilities	DSU
Persons without disabilities	12

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

27-7. Increase tobacco use cessation attempts by adolescent smokers.

Target: 84 percent.

Baseline: 73 percent of ever-daily smokers in grades 9 through 12 had tried to quit smoking in 1997.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Survey (YRBS), CDC, NCCDPHP.

Students in Grades 9 Through 12 Who Were Ever Daily Smokers (Ever Smoked Every Day for 30 Days), 1997	Tried To Quit 27-7. Both Genders	 Females*	 Males*
		Percent	
TOTAL	73	78	69
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU

Students in Grades 9 Through 12 Who Were Ever Daily Smokers (Ever Smoked Every Day for 30 Days), 1997	Tried To Quit		
	27-7. Both Genders	Females*	Males*
	Percent		
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	62	74	52
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	65	80	55
White	76	79	73
Grade			
9th grade	66	74	58
10th grade	77	83	71
11th grade	73	77	71
12th grade	74	77	73
Parents' education level			
Less than high school	69	81	57
High school graduate	79	82	76
At least some college	72	76	69

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

27-8. Increase insurance coverage of evidence-based treatment for nicotine dependency.

Target and baseline:

Objective	Increase in Insurance Coverage of Evidence-Based Treatment for Nicotine Dependency	1998 Baseline	2010 Target
		Percent	
27-8a.	Managed care organizations	75	100
		Number	
27-8b.	Medicaid programs in States and the District of Columbia	24	51
27-8c.	All insurance	**Developmental**	

Target setting method: Total coverage of FDA-approved pharmacotherapies and behavioral therapies.

Data sources: Addressing Tobacco in Managed Care Survey, Robert Wood Johnson Foundation; (Medicaid data) National Conference of State Legislators.

Nearly 70 percent of current smokers want to quit smoking, and approximately 45 percent have quit smoking for at least a day because they were trying to quit.[10] However, only about 2.5 percent of current smokers stop smoking permanently each year.[24] Smoking cessation has major and immediate health benefits for men and women of all ages. For example, people who quit smoking before age 50 years have half the risk of dying in the next 15 years, compared with continuing smokers.[2]

In 1996, the Agency for Health Care Policy and Research (now the Agency for Healthcare Research and Quality) sponsored an expert panel that produced an evidence-based guideline that evaluated smoking cessation interventions available at the time and concluded that the efficacy of intervention increases with intensity.[50] The results clearly showed that a variety of smoking cessation interventions are effective: (1) simple advice to quit by a clinician (30 percent increase in cessation), (2) individual and group counseling (doubles cessation rates), (3) telephone hotlines and helplines (40 percent increase in cessation), and (4) nicotine replacement therapy (up to double the cessation rates). This guideline will be updated in 2000.

AHCPR's guideline recommended that smoking cessation treatments (both pharmacotherapy and counseling) be provided as paid services and that providers be reimbursed for delivering effective smoking cessation interventions. AHCPR concluded that effective reduction of tobacco use will require health care systems to make institutional changes resulting in systematic identification of, and intervention with, all tobacco users at every visit.[50]

Almost 44 percent of high school seniors who smoke report that they would like to stop smoking. About 30 percent of high school seniors who smoke report that they have tried to stop smoking but failed to do so.[51] Although many teen smokers want to quit or have tried to quit smoking, almost no proven interventions exist for tobacco use cessation among teenagers. Research is under way to assess effective cessation methods for young persons, but expanded research efforts are needed.

Data reported from a study of managed care organizations indicated that 75 percent of plans either partially or fully covered one or more smoking cessation interventions. Full coverage was provided most often for self-help materials and smoking cessation classes, whereas more costly interventions, such as pharmaceutical treatments for nicotine addiction, were less frequently covered in full.[52] According to other data, Medicaid coverage of smoking cessation services, including counseling and nicotine replacement therapies, varied by State.[53] (See Focus Area 1. Access to Quality Health Services.)

Exposure to Secondhand Smoke

27-9. Reduce the proportion of children who are regularly exposed to tobacco smoke at home.

Target: 10 percent.

Baseline: 27 percent of children aged 6 years and under lived in a household where someone smoked inside the house at least 4 days per week in 1994.

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Children Aged 6 Years and Under, 1994	Lived in Household With Someone Who Smoked Inside the Home At Least 4 Days a Week Percent
TOTAL	27
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	23
Asian	DSU
Native Hawaiian and other Pacific Islander	DSU
Black or African American	28
White	27
Hispanic or Latino	20
Not Hispanic or Latino	29
Black or African American	28
White	29
Gender	
Female	28
Male	27

Children Aged 6 Years and Under, 1994	Lived in Household With Someone Who Smoked Inside the Home At Least 4 Days a Week Percent
Family income	
Poor	38
Near poor	33
Middle/high income	19

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

27-10. Reduce the proportion of nonsmokers exposed to environmental tobacco smoke.

Target: 45 percent.

Baseline: 65 percent of nonsmokers aged 4 years and older had a serum cotinine level above 0.10 ng/mL in 1988-94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Nonsmokers Aged 4 Years and Older, 1988–94	Serum Cotinine Levels > 0.10 ng/mL Percent
TOTAL	65
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	81
White	63
Hispanic or Latino	DSU
Mexican American	53

Nonsmokers Aged 4 Years and Older, 1988–94	**Serum Cotinine Levels > 0.10 ng/mL** Percent
Not Hispanic or Latino	DSU
Black or African American	81
White	63
Gender	
Female	61
Male	69
Education level (aged 25 years and older)	
Less than high school	71
High school graduate	67
At least some college	55
Age	
4 to 11 years	68
12 to 19 years	69
20 to 44 years	67
45 to 64 years	65
65 years and older	51

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

27-11. Increase smoke-free and tobacco-free environments in schools, including all school facilities, property, vehicles, and school events.

Target: 100 percent.

Baseline: 37 percent of middle, junior high, and senior high schools were smoke-free and tobacco-free environment in 1994.

Target setting method: Retain year 2000 target.

Data source: School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP.

27-12. Increase the proportion of worksites with formal smoking policies that prohibit smoking or limit it to separately ventilated areas.

Target: 100 percent.

Baseline: 79 percent of worksites with 50 or more employees had formal smoking policies that prohibited or limited it to separately ventilated areas in 1998-99.

Target setting method: Retain year 2000 target.

Data source: 1999 National Worksite Health Promotion Survey, Association for Worksite Health Promotion (AWHP).

27-13. Establish laws on smoke-free indoor air that prohibit smoking or limit it to separately ventilated areas in public places and worksites.

Target and baseline:

Objective	Jurisdictions With Laws on Smoke-Free Air	1998 Baseline	2010 Target
		Number	
	States and the District of Columbia		
27-13a.	Private workplaces	1	51
27-13b.	Public workplaces	13	51
27-13c.	Restaurants	3	51
27-13d.	Public transportation	16	51
27-13e.	Day care centers	22	51
27-13f.	Retail stores	4	51
27-13g.	**Tribes**	**Developmental**	
27-13h.	**Territories**	**Developmental**	

Target setting method: Retain year 2000 target.

Data source: State Tobacco Activities Tracking and Evaluation System (STATE System), CDC, NCCDPHP, OSH.

In 1996, only 37 percent of adult nontobacco users were aware enough of their exposure to report having been exposed to secondhand smoke either at home or at work.[17] Both home and workplace environments contributed significantly to widespread exposure to secondhand smoke in the United States.[17] An alarming level of secondhand smoke exposure at home was reported. Exposure ranged from 12 percent of children aged 17 years and under in Utah to 34 percent of children in Kentucky.[18]

A 1992-93 National Cancer Institute survey found that significant numbers of workers, especially those in blue-collar and service occupations, reported smoke-free workplace policy rates considerably lower than the overall rate of 46 percent.[54] Least likely to have a smoke-free policy were food service workers—waiters, waitresses, cooks, bartenders, and counter help. Of these 5.5 million workers, 22 percent were teenagers. In a 1993 study, food service workers were estimated to have a 50 percent increased risk of dying from lung cancer compared to the general population, with the higher risk attributed in part to their workplace exposure to secondhand smoke.[55]

Policy, educational, and clinical interventions can reduce secondhand smoke exposure among the population. Policy approaches include the voluntary adoption of worksite restrictions, enactment of clean indoor air laws, and enforcement of restrictions. Public education campaigns and local community efforts to limit smoking in public places in California and Massachusetts have been associated with reported reductions in the exposure of both adults and children to secondhand smoke.[33, 34]

A 1996 study concluded that a portion of children's respiratory diseases and their associated illness may be prevented by decreasing or eliminating their exposure to secondhand smoke.[56]

Another 1996 study concluded that secondhand smoke exposure worsens asthma and each year leads to 500,000 visits to physicians by children.[57] The American Academy of Pediatrics has recommended that pediatricians inform parents about the health hazards of secondhand smoke and provide guidance on smoking cessation.[58] (See Focus Area 8. Environmental Health and Focus Area 24. Respiratory Diseases.)

Social and Environmental Changes

27-14. Reduce the illegal buy rate among minors through enforcement of laws prohibiting the sale of tobacco products to minors.

Objective	**Jurisdictions With a 5 Percent or Less Illegal Buy Rate Among Minors**	**1998 Baseline**	**2010 Target**
		Number	
27-14a.	States and the District of Columbia	0	51
27-14b.	Territories	0	All

Target setting method: Based on published literature and expert opinion.

Data source: State Synar Enforcement Reporting, SAMHSA, CSAP.

27-15. Increase the number of States and the District of Columbia that suspend or revoke State retail licenses for violations of laws prohibiting the sale of tobacco to minors.

Target: All States and the District of Columbia.

Baseline: 34 States with some form of retail licensure could suspend or revoke the license for violation of minors' access laws in 1998.

Target setting method: Total coverage.

Data source: STATE System, CDC, NCCDPHP, OSH.

Restricting minors' access to tobacco products is one core element in a comprehensive approach to tobacco use prevention. In 1997, of the 30 percent of students who purchased their cigarettes from a gas station or store in the month preceding the survey,[59] 67 percent of them were not asked for proof of age. Earlier data indicated that only about half of smokers aged 12 to 17 years were ever asked to show proof of age when they tried to purchase cigarettes.[60] Data revealed that self-service tobacco displays make it easier for minors to purchase or steal tobacco products. In a 1995 survey, stores with self-service displays were 61 percent more likely to sell tobacco to minors than stores without self-service displays.[61]

Although all States prohibit the sale of tobacco products to minors, enforcement of laws has been limited until recent years. States and localities have undertaken a number of measures to reduce minors' access, including policy establishment, retail licensure, enforcement activities, compliance checks, retailer education, and youth involvement. State restrictions on tobacco vending machines vary, with the most stringent restrictions banning vending machines except in areas inaccessible to minors. Not all States have retail licensure systems. Among those that do, not all will suspend or revoke licenses for violation of State minors' access laws. Federal policy initiatives require the active participation of State and local communities to ensure effective implementation.[35, 62] In addition to efforts to address purchase of tobacco products by minors, tobacco control initiatives also must target social sources of tobacco for young people, including friends, siblings, and parents.

27-16. (Developmental) Eliminate tobacco advertising and promotions that influence adolescents and young adults.

Potential data source: American Legacy Foundation, National Association of Attorneys General.

27-17. Increase adolescents' disapproval of smoking.

Target and baseline:

Objective	Increase in Adolescents' Disapproval of Smoking	1998 Baseline	2010 Target
		Percent	
27-17a.	8th grade	80	95
27-17b.	10th grade	75	95
27-17c.	12th grade	69	95

Target setting method: Retain year 2000 target.

Data source: Monitoring the Future Study (MTF), NIH, NIDA.

Adolescents, 1998	**Disapproval of Smoking One or More Packs of Cigarettes Daily**		
	27-16a. 8th Graders	**27-16b. 10th Graders**	**27-16c. 12th Graders**
		Percent	
TOTAL	80	75	69
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DNC	DNC	DNC
Asian	DSU	DSU	DSU
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	DNC	DNC	DNC
White	DNC	DNC	DNC
Hispanic or Latino	76	81	76
Not Hispanic or Latino	DNC	DNC	DNC
Black or African American	82	83	82
White	81	72	64
Gender			
Female	83	79	73
Male	77	72	64

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Adolescents, 1998	Disapproval of Smoking One or More Packs of Cigarettes Daily		
	27-16a. 8th Graders	27-16b. 10th Graders	27-16c. 12th Graders
		Percent	
Parents' education level			
Less than high school	DNC	DNC	DNC
High school graduate	DNC	DNC	DNC
At least some college	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable

Attitudes of adolescents regarding the acceptability of tobacco use provide an indication of their susceptibility to tobacco use.[20] The 1994 Surgeon General's report on tobacco concluded that the following are all risk factors for tobacco use among adolescents: adolescents' perceptions that tobacco use is the norm, peers' and siblings' approval of tobacco use, and the belief that tobacco use provides benefits. The report further concluded that for spit tobacco use, insufficient knowledge among youth of the health effects also is a factor.[20]

27-18. (Developmental) Increase the number of Tribes, Territories, and States and the District of Columbia with comprehensive, evidence-based tobacco control programs.

Potential data sources: STATE System, CDC, NCCDPHP, OSH; IHS.

Evidence indicates that comprehensive tobacco control programs are effective. Investments in such programs to date, however, have been seriously limited. Data from California and Massachusetts indicate that the ability to sustain reductions in per capita consumption due to excise tax increases is greater when the tax increase is combined with a comprehensive tobacco control program. Per capita cigarette consumption in California and Massachusetts, two States with such programs, has declined two to three times faster than in the rest of the Nation. In addition, the rapid rise in youth smoking rates experienced nationwide was slowed in both California and Massachusetts as a result of the combined effects of a tax increase and a strong tobacco control program.[38] Other analyses suggest that comprehensive programs, including media campaigns, have reduced the rate of increase in youth smoking in States with programs funded by excise taxes (such as Massachusetts), compared with the rest of the Nation.[63]

In the Minnesota Heart Health Program, smoking rates were reduced by approximately 40 percent in the intervention community with a combined school-based curriculum, community-based activities, and mass media interventions.[40] Furthermore, a preliminary report on the effectiveness of the American Stop Smoking Intervention Study (ASSIST) indicated that in 1993-94, per capita cigarette consumption was 7 percent less in the 17 ASSIST States than in the remaining States (excluding California).[64]

Limiting the appeal of tobacco products to young people involves both restricting tobacco advertising and promotions and countering the ability of pro-tobacco messages to reach large segments of the population quickly and efficiently. Because of their appeal, the mass media can serve as a powerful tool for tobacco control. Television and radio stations, magazines, and other media can deliver information and educational messages directly to targeted audiences, build public support for tobacco control programs and policies, reinforce social norms supporting the nonuse of tobacco, and counteract the pro-use messages and images of tobacco marketing and public relations campaigns.

An essential element in programs for reducing tobacco's appeal to youth is to change the current social environment that reinforces the acceptability of tobacco use.[20,32,40] This change requires strategies to counter the billions of dollars worth of tobacco advertising and promotion that bombard young people with false and misleading messages and images about tobacco.[20,32] An integral part of the Arizona, California, and Massachusetts tobacco control programs has been paid counteradvertising campaigns to deglamorize and denormalize tobacco use, especially among young people, with unequivocal messages about the negative effects of tobacco use on health, performance, and appearance.[33,34,36,37] Preliminary results indicate that the media programs have reached youth, adults, and multicultural populations in those States and have achieved their program objectives.

27-19. Eliminate laws that preempt stronger tobacco control laws.

Target: Zero States.

Baseline: 30 States had preemptive tobacco control laws in the areas of clean indoor air, minors' access laws, or marketing in 1998.

Target setting method: Retain year 2000 target.

Data source: STATE System, CDC, NCCDPHP, OSH.

Preemptive State laws limit the ability of State and local programs to address major areas of tobacco control, in particular smoke-free indoor air and minors' access policies. A preemptive State tobacco control law prevents local jurisdictions from enacting restrictions that are more restrictive than or vary from State law. The tobacco industry attempts to promote such laws as health promotion efforts that ensure a uniform set of restrictions for all communities. Such laws, however, usually afford less protection and prevent local governments from adopting more restrictive provisions in the future.[65] Preemptive laws have led, for example, to weaker public health standards, loss of community education involved in the passage of local ordinances, more difficulty with enforcement at the local level, and lower compliance with the laws.[66, 67] Several national organizations have expressed opposition to the enactment of preemptive laws, including the American Public Health Association, the Institute of Medicine, and a working group of State attorneys general.

27-20. (Developmental) Reduce the toxicity of tobacco products by establishing a regulatory structure to monitor toxicity.

Potential data source: FDA.

Over the past several years, new technology and the increasing availability of alternative forms of nicotine delivery have prompted discussion of a "harm reduction" approach to tobacco control. Part of this discussion has focused on making tobacco products safer, while acknowledging that there is no such thing as a "safe cigarette." Approaches proposed and debated include the reduction of tar and nicotine levels in tobacco products, the reduction of tobacco-specific nitrosamines, and the reduction of specific additives in tobacco products.

Issues raised by products or technologies that purport to reduce risk require the establishment of an appropriate scientific and regulatory framework within the Federal Government. Much work needs to be done before scientific and regulatory agencies are in a position to evaluate the issues raised by these technologies and to inform the public about risks.

A framework also is needed to ensure that the ongoing activities of Federal agencies, such as the collection of information about tobacco product ingredients and the establishment of protocols for measuring tar and nicotine yields, better serve public health needs. For example, an inadequate method for testing tar and nicotine yields has led to inaccurate information about the tar and nicotine smokers actually receive and a misperception among smokers about the safety of so-called low-tar cigarettes.[68] In addition, information provided by tobacco companies about additives in tobacco products is protected from release to the public.[69]

27-21. Increase the average Federal and State tax on tobacco products.

Target and baseline:

Objective	Increase in Combined Federal and Average State Tax	Baseline	2010 Target
27-21a.	Cigarettes	$0.63*	$2
27-21b.	Spit tobacco	$0.27†	$2

*24 cent Federal tax; 38.9 cent average State tax in 1998.

†2.7 cent Federal tax; 24 cent average State tax in 1999.

Target setting method: Expert opinion; comparison to international tax rates.

Data source: STATE System, CDC, NCCDPHP, OSH.

As with almost all consumer products, the demand for cigarettes decreases as price increases. An increase in the excise tax on tobacco products would reduce rates of use of both cigarettes and spit tobacco among both adults and youth. Economists agree that a 10 percent increase in the price of cigarettes will reduce overall smoking among adults by approximately 4 percent.[63, 70] Data suggest that the prevention effect on youth would be at least as large if not larger.[63, 70]

Increasing the tax on smokeless tobacco products would reduce demand. Economists have found that a 10 percent increase in the price of spit tobacco products will decrease male youth demand by 5.9 percent.[71] To reduce overall tobacco use rates, taxes on smokeless tobacco should be set at a level equivalent to cigarette excise taxes at both the Federal and State levels.

A 1989 report predicted that for every 10 percent increase in the price of cigarettes, there would be a 7.6 to 12 percent decrease in teen smoking participation rates (that is, whether teens smoke at all).[72] The report concluded that among teens, smoking participation responds more strongly to price than does the amount of daily cigarette consumption. Studies conducted since this report reinforce and support these conclusions.[63, 70, 71] Data also indicate that earmarking funds from an excise tax increase for tobacco prevention and control programs increases both public support for the proposed tax and the public health impact of the price increase.[38, 73]

Related Objectives From Other Focus Areas

1. Access to Quality Health Services
1-2. Health insurance coverage for clinical preventive services
1-3. Counseling about health behaviors
3. Cancer
3-1. Cancer deaths
3-2. Lung cancer deaths
3-4. Cervical cancer deaths
3-6. Oropharyngeal cancer deaths
7. Educational and Community-Based Programs
7-5. Worksite health promotion programs
7-6. Participation in employer-sponsored health promotion activities
7-10. Community health promotion programs
7-11. Culturally appropriate community health promotion programs
7-12. Older adult participation in community health promotion activities
8. Environmental Health
8-18. Homes tested for radon
8-19. Radon resistant new home construction
8-29. Global burden of disease
12. Heart Disease and Stroke
12-1. Coronary heart disease (CHD) deaths
12-7. Stroke deaths

16. Maternal, Infant, and Child Health

16-1. Fetal and infant deaths
16-6. Prenatal care
16-10. Low birth weight and very low birth weight
16-11. Preterm birth
16-17. Prenatal substance exposure

21. Oral Health

21-6. Early detection of oral and pharyngeal cancer
21-7. Annual examinations for oral and pharyngeal cancer

23. Public Health Infrastructure

23-4. Data for all population groups
23-5. Data for Leading Health Indicators, Health Status Indicators, and Priority Data Needs at Tribal, State, and local levels

24. Respiratory Diseases

24-1. Deaths from asthma
24-2. Hospitalizations for asthma
24-3. Hospital emergency department visits for asthma

26. Substance Abuse

26-9. Substance-free youth
26-16. Peer disapproval of substance abuse
26-17. Perception of risk associated with substance abuse

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Consumption: The amount of tobacco products consumed or used by the population. Consumption usually is measured in units, such as the number of cigarettes smoked or pounds of spit tobacco used over a given period of time.

Counteradvertising: The placement of pro-health advertisements on TV, on radio, in print, on billboards, on movie trailers, on the Internet, and in other media.

Illegal buy rate: Rate of illegal sales to minors in compliance checks to assess adherence to minors' tobacco access laws.

Nicotine dependency: Highly controlled or compulsive use, use despite harmful effects, withdrawal upon cessation of use, and recurrent drug craving.

Notifiable condition: A disease or risk factor that is reported to the Centers for Disease Control and Prevention by the States.

Pharmacotherapy: Medical treatment using pharmaceuticals or drugs.

Preemptive laws: Legislation prohibiting any local jurisdiction from enacting restrictions more stringent than State law or restrictions that may vary from State law.

Secondhand smoke: A mixture of the smoke exhaled by smokers and the smoke that comes from the burning end of the tobacco product.

Serum cotinine: A biological marker for tobacco use and exposure to environmental tobacco smoke measured in the blood. Cotinine is a breakdown product of nicotine.

Spit tobacco: Chewing tobacco, snuff, or smokeless tobacco.

References

1. U.S. Department of Health and Human Services (HHS). *Reducing the Health Consequences of Smoking: 25 Years of Progress. A Report of the Surgeon General.* HHS Pub. No. (CDC) 89-8411. Atlanta, GA: HHS, Public Health Service, Centers for Disease Control, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1989.

2. HHS. *The Health Benefits of Smoking Cessation. A Report of the Surgeon General.* HHS Pub. No. (CDC) 90-8416. Atlanta, GA: HHS, Public Health Service, Centers for Disease Control, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1990.

3. DiFranza, J.R., and Lew, R.A. Effect of maternal cigarette smoking on pregnancy complications and sudden infant death syndrome. *Journal of Family Practice* 40(4):385-394, 1995.

4. HHS. *The Health Consequences of Using Smokeless Tobacco. A Report of the Advisory Committee to the Surgeon General.* NIH Publication No. 86-2874. Bethesda, MD: HHS, Public Health Service, Centers for Disease Control, Center for Health Promotion and Education, Office on Smoking and Health, 1986.

5. HHS. *The Health Consequences of Smoking: Cancer. A Report of the Surgeon General.* Rockville, MD: HHS, Public Health Service, Centers for Disease Control, Center for Health Promotion and Education, Office on Smoking and Health, 1982.

6. Centers for Disease Control and Prevention (CDC). Bidi Use Among Urban Youth—Massachusetts, March-April 1999. *Morbidity and Mortality Weekly Report* 48(36):796-799, 1999.

7. Gupta, P.C.; Hammer, J.E. III; Murti, P.R.; eds. Control of tobacco-related cancers and other diseases; proceedings of an international symposium. Bombay, India: Tata Institute of Fundamental Research, Oxford University Press, 1992.

8. CDC. Cigarette smoking-attributable mortality and years of potential life lost—United States, 1984. *Morbidity and Mortality Weekly Report* 46(20):444-451, 1997.

9. CDC. Projected smoking-related deaths among youth—United States. *Morbidity and Mortality Weekly Report* 45:971-974, 1996.

10. CDC. Medical-care expenditures attributable to cigarette smoking—United States, 1993. *Morbidity and Mortality Weekly Report* 43(26):469-472, 1994.

11. CDC. Medical-care expenditures attributable to cigarette smoking during pregnancy—United States, 1995. *Morbidity and Mortality Weekly Report* 46:1048-1050, 1997.

12. HHS. *The Health Consequences of Involuntary Smoking. A Report of the Surgeon General.* Rockville, MD: HHS, Public Health Service, CDC, Center for Health Promotion and Education, Office on Smoking and Health, 1986.

13. U.S. Environmental Protection Agency (EPA). *Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders.* EPA Pub. No. EPA/600/6-90/006F. Washington, DC: U.S. Environmental Protection Agency, 1992.

14. California Environmental Protection Agency, *Health Effects of Exposure to Environmental Tobacco Smoke.* Final Report. Sacramento, CA: California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, 1997.

15. Glantz, S.A., and Parmely, W.W. Passive smoking and heart disease: mechanism and risk. *JAMA* 273:1047-1053, 1995.

16. Howard, G.; Wagenknech, L.E.; Burke, G.E.; et al. Cigarette smoking and progression of atherosclerosis. *JAMA* 279(2):119-124, 1998.

17. Pirkle, J.L.; Flegal, K.M.; Bernet, J.T.; Brody, D.J.; Etzel, R.A.; and Maurer, K.R. Exposure of the U.S. population to environmental tobacco smoke. *JAMA* 275:1233-1240, 1996.

18. CDC. State-specific prevalence of cigarette smoking among adults, and children's and adolescents' exposure to environmental tobacco smoke—United States. *Morbidity and Mortality Weekly Report* 46:1038-1043, 1997.

19. CDC. Cigarette smoking among adults—United States, 1997. *Morbidity and Mortality Weekly Report* 18(43); 993-6, 1999.

20. HHS. *Preventing Tobacco Use Among Young People: A Report of the Surgeon General.* Atlanta, GA: HHS, Public Health Service, CDC, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1994.

21. HHS. Drug use among teenagers leveling off. *HHS News*, December 17, 1999.

22. CDC. Tobacco use among high school students—United States, 1997. *Morbidity and Mortality Weekly Report* 47:229-233, 1998.

23. HHS. *The Health Consequences of Smoking: Nicotine Addiction. A Report of the Surgeon General.* HHS Pub. No. (CDC) 88-8406. Rockville, MD: HHS, Public Health Service, CDC, Center for Health Promotion and Education, Office on Smoking and Health, 1988.

24. CDC. Smoking cessation during previous year among adults—United States, 1990 and 1991. *Morbidity and Mortality*

Weekly Report 42:504-507, 1993.

25. HHS. Tobacco Use Among U.S. Racial/Ethnic Minority Groups—African Americans, American Indians, and Alaska Natives, Asian Americans and Pacific Islanders, and Hispanics: A Report of the Surgeon General. Atlanta, GA: HHS, Public Health Service, CDC, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1998.

26. National Asian Women's Health Organization. *Smoking Among Asian Americans: A National Tobacco Survey*. 1998. San Francisco, CA.

27. Goebel, K. Lesbians and gays face tobacco targeting. *Tobacco Control* 3:65-67, 1994.

28. Skinner, W.F. The prevalence and demographic predictors of illicit and licit drug use among lesbians and gay men. *American Journal of Public Health* 84(8): 1307-1310, 1994.

29. Penkower, L.; Dew, M.A.; Kingsley, L.; Becker, J.T.; Satz, P.; Schaerf, F.; and Sheridan, K. Behavioral, health and psychosocial factors and risk for HIV infection among sexually active homosexual men: The Multicenter AIDS Cohort Study. *American Journal of Public Health* 81(2): 194-196, 1991.

30. Arday, D.A.; Edlin, B.R.; Giovino, G.A.; and Nelson, D.E. Smoking, HIV infection, and gay men in the United States. *Tobacco Control* 2:156-158, 1993.

31. CDC. Youth Risk Behavior Surveillance: National College Health Risk Behavior Survey—United States, 1995. *Morbidity and Mortality Weekly Report* 46(SS-6): 1-56, 1997.

32. HHS. Strategies to Control Tobacco Use in the United States: A Blueprint for Public Health Action in the 1990s. Smoking and Tobacco Control Monograph #1. NIH Pub. No. 92-3316. Bethesda, MD: HHS, Public Health Service, National Institutes of Health, National Cancer Institute, 1991.

33. Pierce, J.P.; Evans, N.; Farkas, A.J.; Cavin, S.W.; et al. *Tobacco Use in California: An Evaluation of the Tobacco Control Program, 1989-93*. La Jolla, CA: University of California, San Diego, 1994.

34. Abt Associates, Inc., for the Massachusetts Department of Public Health. *Independent Evaluation of the Massachusetts Tobacco Control Program. Second Annual Report*. Cambridge, MA: Abt Associates Inc., 1996.

35. Gostin, L.O.; Arno, P.S.; and Brandt, A.M. FDA regulation of tobacco advertising and youth smoking. Historical, social, and constitutional perspectives. *JAMA* 277:410-418, 1997.

36. Tobacco Education Oversight Committee. Toward a Tobacco-Free California: Exploring a New Frontier, 1993-1995. 69.

37. Arizona Tobacco Use Prevention Plan (http://www.hs.state.az.us/aztepp) May 12, 1999.

38. CDC. Cigarette smoking before and after an excise tax increase and an antismoking campaign. *Morbidity and Mortality Weekly Report* 45:966-970, 1996.

39. CDC. Tobacco use among middle and high school students—Florida, 1998 and 1999. *Morbidity and Mortality Weekly Report* 48:248-253, 1999.

40. Pechacek, T.F.; Asthma, S.; and Eriksen, M.P. Tobacco: Global burden and community solutions. In: Yusuf, S.; Cairns, J.A.; Camm, A.J.; Fallen, E.L.; Gersh, B.J. (Eds). *Evidence Based Cardiology*. London: BMJ Books, 1998. 165-178.

41. Glynn, T. Essential elements of school-based smoking prevention programs. *Journal of School Health* 1989; 59(5):181-188.

42. Botvin, G.J.; Renick, N.L.; and Baker, E. The effects of scheduling format and booster sessions on a broad-spectrum psychosocial smoking prevention. *Journal of Behavioral Medicine* 6(4):359-379, 1983.

43. Perry, C.L.; Klepp, K.I.; and Sillers, C. Community-wide strategies for cardiovascular health: The Minnesota Heart Health Program youth program. *Health Education Research* 4(1):87-101, 1989.

44. Pentz, M.A.; Dwyer J.H.; MacKinnon, D.P.; Flay, B.R.; Hansen, W.B.; Wang, E.Y.; and Johnson, C.A. A multicommunity trial for primary prevention of adolescent drug abuse. Effects on drug use prevalence. *JAMA* 261(2):3259-3266, 1989.

45. Vartianen, E.; Fallonen, U.; McAlister, A.L.; and Puska, P. Eight-year follow-up results of an adolescent smoking prevention program: The North Karelia Youth Project. *American Journal of Public Health* 80(1):78-79, 1990.

46. Perry, C.L.; Kelder, S.H.; Murray, D.M.; and Klepp K.I. Community-wide smoking prevention: Long-term outcomes of the Minnesota Heart Health Program and the Class of 1989 Study. *American Journal of Public Health* 82(9):1210-1216, 1992.

47. Botvin, G.J.; Baker, E.; Dusenbury, L.; Botvin, E.M.; and Diaz, T. Long-term follow-up results of a randomized drug abuse prevention trial in a white middle-class

population. *Journal of the American Medical Association* 273(14):1106-1112, 1995.

48. CDC. Guidelines for school health programs to prevent tobacco use and addiction. *Morbidity and Mortality Weekly Report* 43:1-18, 1994.

49. CDC. Addition of prevalence of cigarette smoking as a nationally notifiable condition—June 1996. *Morbidity and Mortality Weekly Report* 45:537, 1996.

50. HHS. *Smoking Cessation: Clinical Practice Guideline*, No. 18. HHS Pub. No. (AHCPR) 96-0692. Washington, DC: HHS, Public Health Service, Agency for Health Care Policy and Research, 1996.

51. Monitoring the Future Project 1997. 1992-95 combined data. University of Michigan, Institute for Social Research, Public Use Data Tapes, 1992-956. Ann Arbor, Michigan.

52. McPhillips-Tangrum, C. Results from the first annual survey on addressing tobacco in managed care. *Tobacco Control* 7:S11-S13, 1998.

53. Zebrek, A. *Medicaid and Indigent Care: Smoking Cessation.* Health Policy Tracking Service. 1998. Washington, DC.

54. Gerlach, K.; Shopland, D.R.; Hartman, A.M.; Gibson, J.T.; and Pechacek, T.F. Workplace smoking policies in the United States: Results from a national survey of more than 100,000 workers. *Tobacco Control* 6:199-206, 1997.

55. Siegel, M. Involuntary smoking in the restaurant workplace. *JAMA* 270:490-493, 1993.

56. Mannino, D.M.; Siegel, M.; Husten, C.; Rose, D.; and Etzel, R. Environmental tobacco smoke exposure and health effects in children: Results from the 1991 National Health Interview Survey. *Tobacco Control* 5:13-18, 1996.

57. DiFranza, J.R, and Lew, R.A. Morbidity and mortality in children associated with the use of tobacco products by other people. *Pediatrics* 97:560-568, 1996.

58. American Academy of Pediatrics (Committee on Environmental Health). Environmental tobacco smoke: A hazard to children. *Pediatrics* 99:639-642, 1997.

59. Kann, L.; Kinchen, S.A.; William, B.I.; et al. Youth risk behavior surveillance—United States, 1997. *Morbidity and Mortality Weekly Report* 47 (SS-3):1-89, 1998.

60. CDC. Accessibility of tobacco products to youths aged 12-17—United States, 1989-1993. *Morbidity and Mortality Weekly Report* 45:125-130, 1996.

61. Widley, M.B.; Woodruff, S.I.; Pamplone, S.Z.; and Conway, T.L. Self-service sale of tobacco: How it contributes to youth access. *Tobacco Control* 4:355-361, 1995.

62. Substance Abuse and Mental Health Services Administration. Tobacco Regulation for Substance Abuse Prevention and Treatment Block Grants; final rule. *61 Federal Register* 13:1492-1500, 1996.

63. Chaloupka, F., and Grossman, M. *National Bureau of Economic Research Working Paper*, No. 5740. September 1996. Cambridge, MA.

64. Manley, M.; Pierce, J.P.; Gilpin, E.A.; Rosbrook, B.; Berry, C.; and Wun, L. Impact of the American Stop Smoking Intervention Study on Cigarette Consumption. *Tobacco Control* 6:S12-S16, 1997.

65. Conlisk, E.; Siegel, M.; Lengerich, E.; MacKenzie, W.; Malek, S.; and Eriksen, M. The status of local smoking regulations in North Carolina following a state preemption bill. *JAMA* 273:805-807, 1995.

66. Jordan, J.; Pertschuk M.; and Carol, J. Preemption in tobacco control: History, current issues, and future concerns. 1994. Americans for Nonsmokers' Rights/Western Consortium for Public Health, 97, 0424.

67. Fishman, J.A.; Allison, H.; Knowles, S.B.; et al. State Laws on Tobacco Control—United States. *Morbidity and Mortality Weekly Report* 48 (SS-3): 21-62, 1998.

68. HHS. The FTC Cigarette Test Method for Determining Tar, Nicotine, and Carbon Monoxide Yields of U.S. Cigarettes: A report of the NCI Expert Committee. NIH Publication No. 96-4028. Bethesda, MD:HHS, Public Health Service, National Institutes of Health, National Cancer Institute, 1996.

69. Public Law 99-252, Section 4. The Comprehensive Smokeless Tobacco and Health Education Act of 1986.

70. Department of Treasury. The Economics Costs of Smoking in the United States and the Benefits of Comprehensive Tobacco Legislation. Washington, DC: Department of Treasury Working Paper Series, March, 1998.

71. Chaloupka, F.J.; Tauras, J.A.; and Grossman, M. Public policy and youth smokeless tobacco use. *Southern Economic Journal* 64(2): 503-516, 1997.

72. General Accounting Office. Teen Smoking: Higher Excise Tax Should Significantly Reduce the

Number of Smokers. A report to the Honorable Michael A. Andrews, House of Representatives. GAO/HRD 89-119. Rockville, MD.

73. CDC. Tobacco tax initiative—Oregon, 1996. *Morbidity and Mortality Weekly Report* 46:246-248, 1997.

28

Vision and Hearing

Lead Agency: National Institutes of Health

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Goal

Improve the visual and hearing health of the Nation through prevention, early detection, treatment, and rehabilitation.

Overview

Among the five senses, people depend on vision and hearing to provide the primary cues for conducting the basic activities of daily life. At the most basic level, vision and hearing permit people to navigate and to stay oriented within their environment. They provide the portals for language, whether spoken, signed, or read. They are critical to most work and recreation and allow people to interact more fully. For these reasons, vision and hearing are defining elements of the quality of life. Either, or both, of these senses may be diminished or lost because of heredity, aging, injury, or disease. Such loss may occur gradually, over the course of a lifetime, or traumatically in an instant. Conditions of vision or hearing loss that are linked with chronic and disabling diseases pose additional challenges for patients and their families. From the public health perspective, the prevention of either the initial impairment or additional impairment from these environmentally orienting and socially connecting senses requires significant resources. Prevention of vision or hearing loss or their resulting disabling conditions through the development of improved disease prevention, detection, or treatment methods or more effective rehabilitative strategies must remain a priority.

Vision

Issues and Trends

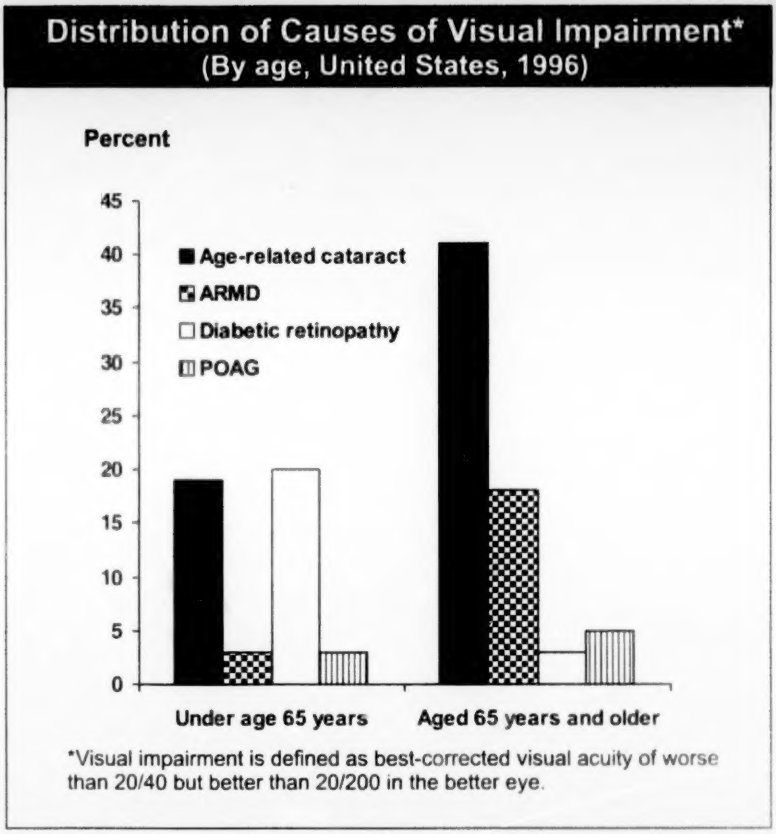
Vision is an essential part of everyday life, depended on constantly by people at all ages. Vision affects development, learning, communicating, working, health, and quality of life. In the United States, an estimated 80 million people have potentially blinding eye diseases, 3 million have low vision, 1.1 million people are legally blind, and 200,000 are more severely visually impaired.[1]

In 1981, the economic impact of visual disorders and disabilities was approximately $14.1 billion per year.[2] By 1995, this figure was estimated to have risen to more than $38.4 billion—$22.3 billion in direct costs and another $16.1 billion in indirect costs each year.[3]

Estimates of the number of people in the United States with visual impairment vary with its definition. Legal blindness represents an artificial distinction and has little value for rehabilitation but is a significant policy issue, determining eligibility for certain disability benefits from the Federal Government. Because of their reliance on narrow definitions of visual impairment, many estimates of the number of people with low vision are understated. When low vision is more broadly defined as visual problems that hamper the performance and enjoyment of everyday activities, almost 14 million persons are estimated to have low vision. Visual impairment is 1 of the 10 most frequent causes of disability in America.[4] In children, visual impairment is associated with developmental delays and the need for special educational, vocational, and social services, often into adulthood. In adults, visual impairment may result in loss of personal independence, decreased quality of life, and difficulty in maintaining employment. Impairment may lead to the need for disability payment, vocational and social services, and nursing home or assistive living placement.

The leading causes of visual impairment are diabetic retinopathy, cataract, glaucoma, and age-related macular degeneration (AMD). People with diabetes are at risk of developing diabetic retinopathy, a major cause of blindness. Because early diagnosis and timely treatment have been shown to prevent vision loss in more than 90 percent of patients, health care practice guidelines recommend an annual dilated eye exam for all people with diabetes.[5, 6] Studies indicate, however, that many people with diabetes do not get an annual dilated eye exam. An estimated 50 percent of patients are diagnosed too late for treatment to be effective. People with diabetes also are more likely to have cataracts and glaucoma.

Glaucoma is a major public health problem in this country. The disease causes progressive optic nerve damage that, if left untreated, leads to blindness. An estimated 3 million people in the United States have the disease;[7] of these, as many as 120,000 are blind as a result.[8] Furthermore, glaucoma is the number one cause of blindness in African Americans. Treatments to slow the progression of the disease are available. However, at least half of the people who have glaucoma are not receiving treatment because they are unaware of their condition. Blindness from glaucoma is believed to impose significant costs annually on the Federal Government in Social Security benefits, lost tax revenues, and health care expenditures.



Distribution of Causes of Visual Impairment*
(By age, United States, 1996)

*Visual impairment is defined as best-corrected visual acuity of worse than 20/40 but better than 20/200 in the better eye.

Source: Rahmani, B.; Tielsch, J.; Katz, J.; et al. The Cause-Specific Prevalence of Visual Impairments in an Urban Population: The Baltimore Eye Survey. *Ophthalmology* 103(11); 1721–1725, November 1996.

While important strides have been made in the prevention and treatment of eye disease, there is no cure for many causes of vision loss, particularly AMD. In addition to being a leading cause of blindness in the United States, AMD is a leading cause of low vision. People with low vision often cannot perform daily routine activities, such as reading the newspaper, preparing meals, or recognizing faces of friends. The inability to see well affects functional capabilities and social interactions and can lead to a loss of independence.

Myopia, or nearsightedness, is a common condition in which images of distant objects are focused in front of, instead of on, the retina. Myopia occurs in approximately 25 percent of the U.S. population.[9] In children, myopia is found in 2 percent of those entering first grade and 15 percent of those entering high school.[10]

Many infants and young children are at high risk for vision problems because of hereditary, prenatal, or perinatal factors. These individuals need to be identified and tested early and annually to make sure their eyes and visual system are functioning normally. Research in the 1980s and 1990s found that amblyopia, a leading cause of visual impairment in children, results from visual problems in very early life.[11] These problems can be prevented or reversed with early detection and appropriate intervention.

While nothing medically can be done for patients with low vision, their quality of life can be greatly improved. Many low vision services and devices are available to help patients maintain their independence. Generally, devices fall into two categories: visual and adaptive. Visual devices use lenses or combinations of lenses to provide magnification. They include such aids as magnifying spectacles, hand-held magnifiers, stand magnifiers, computer monitors with large type, and closed-circuit televisions. Adaptive devices include large-print reading materials (books, newspapers), check writing guides, and high-contrast watch dials. Also in this latter category are auditory aids, such as talking computers.

Disparities

More than two-thirds of visually impaired adults are over age 65 years. Although no gender differences exist in the number of older adults with vision problems, more women are visually impaired than men are because, on average, women live longer than men do. By 1999, almost 34 million persons in the United States were expected to be over age 65 years; that number is expected to more than double by the year 2030.[12] As the population of older adults grows larger, it is estimated that the number of people with visual impairment and other aging-related disabilities will increase.

African Americans are twice as likely to be visually impaired as are whites of comparable socioeconomic status.[1] Studies conducted in the United States and the West Indies have shown that primary open-angle glaucoma exists in a substantially higher proportion of Caribbean blacks and African Americans than in whites.[7, 13, 14]

Hispanics have three times the risk of developing type 2 diabetes as whites, and they also have a higher risk of complications.[15] Available data suggest that visual impairment may be an important public health problem in the Mexican-Hispanic population.[16] There also is a higher rate of myopia in Asian children.[17]

Many barriers still need to be overcome in reducing vision disorders. Among the major prevention strategies are educating health care professionals and the general population about the benefits of prevention, improving access to quality health care across socioeconomic classes to decrease disparities, and gaining cooperation of families in the screening and treatment of infants and children.

Opportunities

Blindness and visual impairment from most eye diseases and disorders can be reduced with early detection and treatment. Most eye diseases, however, lack symptoms until vision is lost. Vision that is lost cannot be restored. Therefore, early intervention through regular vision exams needs to be emphasized. Health education programs directed at groups at higher risk for eye diseases and disorders are essential in preventing blindness and visual impairments. The incorporation of vision into health education programs can be beneficial to participants and to agencies seeking to provide quality care to their clients.

The prevention of blindness and visual impairment and the promotion of eye health result in improved health status and reduced risk factors for illness, disability, and death from diseases and injuries across all age groups. Translation of scientific advances can help people who are blind and visually impaired maintain their quality of life and independence.

Hearing

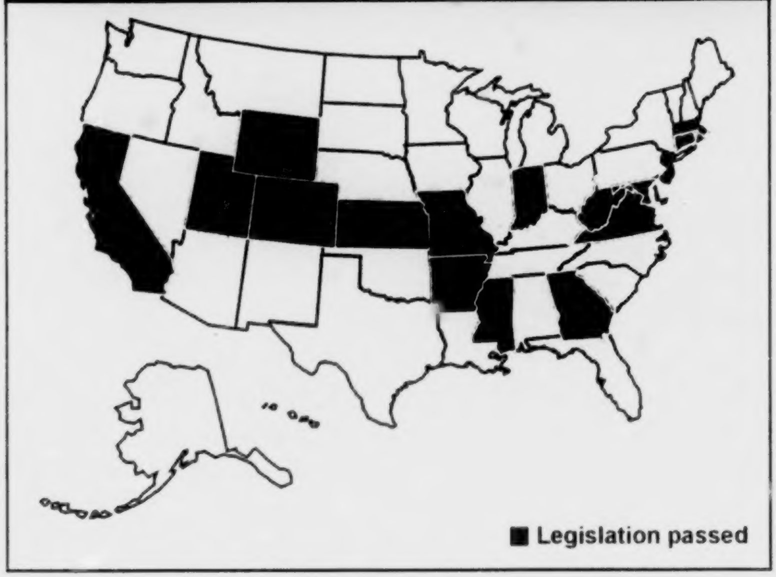
Issues and Trends

An estimated 28 million people in the United States are deaf or hard of hearing.[18] Some 1,465,000 individuals aged 3 years or older are deaf in both ears.[19] Deafness or hearing impairment may be caused by genetic factors, noise or trauma, sensitivity to certain drugs or medications, and viral or bacterial infections.

Language is the set of rules that allow for the sharing of thoughts, ideas, and emotions. Speaking is one way that language can be expressed. Language is also expressed in writing or through sign language by some groups of individuals. In some cases, language can be expressed in additional ways by people who have neurological disorders. The most intensive period for development of language, either spoken or signed, is during the first 3 years of life. This is the period when the brain is developing and maturing. The skills associated with effective acquisition of language, either speech or sign, depend on exposure to, and manipulation of, these communication tools. Early identification of deafness or hearing loss is a critical factor in preventing or ameliorating language delay or disorder in children who are deaf or hard of hearing, allowing appropriate intervention or rehabilitation to begin while the developing brain is ready. Early identification and intervention have lifelong implications for the child's understanding and use of language.

The standard estimate of congenital hearing loss (1 in 1,000 live births) appears to underestimate actual congenital hearing loss as reported in data from States with universal newborn screening programs. Estimates based on emerging data place the number at 2 to 3 per 1,000 live births.[20] These data do not include children who are born with normal hearing but have late-onset or progressive hearing loss. Hearing loss often is sufficient to prevent the spontaneous development of spoken language.[21, 22, 23, 24] More than 50 percent of childhood hearing impairments are believed to be of genetic origin.[25] Earliest possible identification of infant hearing loss has been endorsed widely as critical for the developing child. Minimal hearing loss also is an important factor in school success and psychosocial development.[26]

States With Legislation Requiring Hearing Screening in Newborn Nursery
(United States, 1999)



Source: American Speech-Language-Hearing Association, 1999.

Estimates for the average age of diagnosis of hearing loss in infants and children range from 14 months[27] to around 3 years.[24] This delay of diagnosis is significant in terms of time lost for rehabilitation and time lost during unique opportunities provided by brain development in the infant and young child for language acquisition, spoken or signed. A total of 14.9 percent of children have a low-frequency or high-frequency hearing loss.[28] Strategies for intervention or rehabilitation depend on the kind of hearing loss, age of onset, services available, and family preferences. Strategies include hearing aids, augmentative and assistive devices, oral-auditory instruction, sign language instruction, interpreter services, cued speech, cochlear implant, or combinations of these devices and strategies.

More than 300 inherited syndromes involve hearing impairment.[29, 30] Hereditary hearing loss can be either syndromic (accompanied by other characteristics, such as visual impairment) or nonsyndromic where hearing loss is the only identifiable characteristic. Not all hereditary hearing loss is present at birth. Some hereditary hearing loss may be progressive or may appear later in childhood or adulthood as late-onset hearing impairment or deafness. One cause of late-onset hearing loss is otosclerosis. Otosclerosis, an abnormal growth of bone in the middle ear, results in gradual loss of hearing and affects 1 out of 100 adults in the U.S. population. Another form of hearing loss is Meniere's disease,[31] which causes bilateral, often fluctuating, hearing loss in 20 to 40 percent of cases, usually in conjunction with balance disorder and tinnitus.

Otitis media, or middle ear infection, accounts for 24.5 million visits to doctors' offices[32] and is the most frequent reason cited for taking children to the emergency department.[33] Health care costs for otitis media in the United States have been reported to be \$3 billion to \$5 billion per year.[34] Otitis media often occurs in repeated bouts, causing periods of hearing loss that can affect children during the critical time for language and speech acquisition and hamper children in a variety of learning environments.

Approximately 10 million Americans have permanent, irreversible hearing loss from noise or trauma.[35] Additionally, 30 million people are estimated to be exposed to injurious levels of noise each day. Noise-induced hearing loss is the most common occupational disease and the second most self-reported occupational illness or injury.[36] In industry-specific studies, 44 percent of carpenters and 48 percent of plumbers reported they had a perceived hearing loss.[37] Ninety percent of coal miners are estimated to have a hearing impairment by age 52 years,[38] and 70 percent of male metal and nonmetal miners will experience a hearing impairment by age 60 years.[39] (See Focus Area 20. Occupational Safety and Health.)

Data indicate that people are losing hearing earlier in life and that men are more frequently affected in the 35- to 60-year-old age group.[40] Noise-induced hearing loss can be the result of a traumatic, sudden level of impulse noise, such as an explosion, that can leave an individual immediately and permanently deafened; the result of continuing exposure to high levels of sound in the workplace or in recreational settings; the consequence of years of exposure causing subtle, progressive damage; or exacerbated due to individual vulnerability to noise. Noise-induced hearing loss is related to noise level, proximity to the harmful sound, time of exposure, and individual susceptibility. Many of these causes can be controlled by prevention. Prevention of noise-induced hearing loss is necessary for people both on and off the job.

Disparities

The work environment of the 21st century will require intense use of communication and information skills and technologies. The individual who has a communication disability, disorder, or difference will be at a disadvantage.

Data show that students with disabilities, including hearing impairment and deafness, are disproportionately disadvantaged.[41] The average reading level for deaf persons aged 18 years is estimated at the 4th grade.[42] Early intervention for language acquisition, spoken or signed, can improve later ability to use language. Hearing impairments also are a major barrier to health care access and information.[43, 44] (See Focus Area 6. Disability and Secondary Conditions.)

Older people also are a major concern in terms of hearing health disparity. Presbycusis, the loss of hearing associated with aging, affects about 30 percent of adults who are aged 65 years and older.[45] About half of the population over age 75 years has a significant hearing loss.[46] As the population ages and lives longer, these numbers are increasing. Only about one-fourth of those who could benefit from a hearing aid actually use one.[47] More than 8 percent of the population aged 70 years and older report both hearing and vision impairment.[48] With the exception of increased hearing loss in men, there are no currently available data on these disparities.

Opportunities

Two activities have yielded opportunity for early identification and intervention for infants who are born deaf or with hearing impairments. As of 1999, 20 States are adding laws requiring hearing screening in the newborn nursery. Early identification allows for language acquisition, either spoken or signed, during the critical time period when the child is developing communication skills. Research in the field of molecular genetics has identified genes that contribute to hereditary hearing impairment. The potential exists for early identification and intervention for hearing impairment. Identifying people who may experience late-onset or progressive hearing loss provides time to make the appropriate treatment or rehabilitation options available.

Public education can promote hearing health and behavior to reduce noise-induced hearing loss, which is a fully preventable condition. An education effort, WISE EARS!,[49] has been launched by a coalition of government agencies headed by the National Institute on Deafness and Other Communication Disorders at the National Institutes of Health and the National Institute on Occupational Safety and Health at the Centers for Disease Control and Prevention. They have joined with State agencies; some 60 public interest, advocacy, and patient organizations; businesses; industries; and unions as well as health professional organizations in a national effort to educate the public about ear defense. The education effort focuses both on the public, with special emphasis on children, and on the workforce and has important World Wide Web-based components.

A further opportunity exists with noise-induced hearing loss prevention. Tinnitus, a ringing, buzzing, or roaring in the ears, is a symptom that accompanies many forms of hearing loss and can be debilitating. Data indicate that tinnitus affects almost 15 percent of adults aged 45 years and older.[50] Because tinnitus often is associated with preventable noise-induced hearing loss, hearing protection is key to reducing one important cause of tinnitus.

Assistive technologies are providing additional strategies for individuals with disabilities. For individuals who are deaf or hard of hearing, improved technologies will facilitate their ability to have an equal opportunity in the workplace and in society. (See Focus Area 6. Disability and Secondary Conditions.)

Early identification for improved intervention strategies, prevention of noise-induced hearing loss through health education, and the development of innovations in assistive technology could improve significantly the hearing health of the Nation.

Interim Progress Toward Year 2000 Objectives

Three Healthy People 2000 objectives addressed vision and hearing. Two of these objectives, to reduce the number of cases of significant hearing impairment and to reduce the number of cases of significant visual impairment, have shown progress toward the targets. One objective, early detection of significant hearing impairment, shows no change from baseline.

Note: Unless otherwise noted, data are from Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998-99.*

Vision and Hearing

Goal: Improve the visual and hearing health of the Nation through prevention, early detection, treatment, and rehabilitation.

Number	Objective
Vision	
28-1	Dilated eye examinations
28-2	Vision screening for children
28-3	Impairment due to refractive errors
28-4	Impairment in children and adolescents
28-5	Impairment due to diabetic retinopathy
28-6	Impairment due to glaucoma
28-7	Impairment due to cataract
28-8	Occupational eye injury
28-9	Protective eyewear
28-10	Vision rehabilitation services and devices
Hearing	
28-11	Newborn hearing screening, evaluation, and intervention
28-12	Otitis media
28-13	Rehabilitation for hearing impairment
28-14	Hearing examiantion
28-15	Evaluation and treatment referrals
28-16	Hearing protection
28-17	Noise-induced hearing loss in children
28-18	Noise-induced hearing loss in adults

Vision

28-1. (Developmental) Increase the proportion of persons who have a dilated eye examination at appropriate intervals.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

Many eye diseases and disorders have no symptoms or early warning signs. Dilated eye exams should be performed at appropriate intervals to detect changes in the retina or optic nerve or both. Eye care professionals can view the back of the eye for subtle changes and, if necessary, initiate treatment at the right time.

28-2. (Developmental) Increase the proportion of preschool children aged 5 years and under who receive vision screening.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

Many vision problems begin well before children reach school. Every effort must be made to ensure that, before they reach age 5 years, children receive a screening exam from their health care provider. Early recognition of disease results in more effective treatment that can be sight-saving or even life-saving.

28-3. (Developmental) Reduce uncorrected visual impairment due to refractive errors.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

28-4. Reduce blindness and visual impairment in children and adolescents aged 17 years and under.

Target: 20 per 1,000 children and adolescents aged 17 years and under.

Baseline: 25 per 1,000 children and adolescents aged 17 years and under in 1997.

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Children and Adolescents Aged 17 Years and Under, 1997	**Blindness and Visual Impairment** Rate per 1,000
TOTAL	25
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DSU
Native Hawaiian or other Pacific Islander	DSU
Black or African American	27
White	24
Hispanic or Latino	23
Not Hispanic or Latino	25
Black or African American	27
White	25
Gender	
Female	24
Male	26
Family income level	
Poor	39
Near poor	30
Middle/high income	20
Disability status	
Persons with disabilities	92
Persons without disabilities	19

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

28-5. (Developmental) Reduce visual impairment due to diabetic retinopathy.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

28-6. (Developmental) Reduce visual impairment due to glaucoma.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

28-7. (Developmental) Reduce visual impairment due to cataract.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

28-8. (Developmental) Reduce occupational eye injury.

Potential data sources: Annual Survey of Occupational Injuries and Illnesses (ASOII), U.S. Department of Labor, Bureau of Labor Statistics; National Electronic Injury Surveillance System (NEISS), CPSC, and NIOSH.

29-9. (Developmental) Increase the use of appropriate personal protective eyewear in recreational activities and hazardous situations around the home.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

Almost all eye injuries can be prevented. Many sports and recreation activities, including baseball, basketball, tennis, racquetball, and hockey, carry some risk of eye injury. Some injuries may go unnoticed because only one eye is involved. Activities at home, such as cooking and yard work, also may present eye injury risk.

28-10. (Developmental) Increase the use of vision rehabilitation services and adaptive devices by people with visual impairments.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

Hearing

28-11. Increase the proportion of newborns who are screened for hearing loss by age 1 month, have audiologic evaluation by age 3 months, and are enrolled in appropriate intervention services by age 6 months.

Potential data source: State-based Early Hearing Detection and Intervention (EHDI) Program Network, CDC.

28-12. Reduce otitis media in children and adolescents.

Target: 294 visits per 1,000 children and adolescents under age 18 years.

Baseline: 344.7 visits per 1,000 children and adolescents under age 18 years were for otitis media in 1997.

Target setting method: Better than the best.

Data sources: National Ambulatory Medical Care Survey (NAMCS), CDC, NCHS; National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

Children and Adolescents Under Age 18 Years, 1997	**Visits for Otitis Media** Rate per 1,000
TOTAL	344.7
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian or other Pacific Islander	DNC
Black or African American	294.9
White	369.1
Hispanic or Latino	DSU
Not Hispanic or Latino	DSU
Gender	
Female	366.5
Male	321.8
Age	
Under 3 years	1,160.4
3 to 5 years	456.6
6 to 17 years	113.8
Family income level	
Poor	DNC
Near poor	DNC
Middle/high income	DNC

Children and Adolescents Under Age 18 Years, 1997	Visits for Otitis Media Rate per 1,000
Disability status	
Persons with activity limitations	DNC
Persons without activity limitations	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

28-13. (Developmental) Increase access by persons who have hearing impairments to hearing rehabilitation services and adaptive devices, including hearing aids, cochlear implants, or tactile or other assistive or augmentative devices.

Potential data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; National Health Interview Survey (NHIS), CDC, NCHS.

28-14. (Developmental) Increase the proportion of persons who have had a hearing examination on schedule.

Potential data sources: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS; National Health Interview Survey (NHIS), CDC, NCHS; American Speech-Language-Hearing Association Guidelines for Audiologic Screening.

Audiologic screening serves both primary and secondary prevention purposes, resulting in prevention and amelioration of the effects of hearing loss using developmentally appropriate assessment and treatment. Differing milestones and screening strategies are needed for pediatric populations depending upon their status for impairment screening, disorder screening, or disability screening and their age from birth through 18 years. In the adult population, both impairment and disability screening should occur every decade after age 18 years until age 50 years with more frequent monitoring after age 50.[61]

28-15. (Developmental) Increase the number of persons who are referred by their primary care physician for hearing evaluation and treatment.

Potential data source: National Ambulatory Medical Care Survey (NAMCS), CDC, NCHS.

28-16 (Developmental) Increase the use of appropriate ear protection devices, equipment, and practices.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Noise-induced hearing loss (NIHL) can be caused by one-time exposure to an impulse noise, such as gunfire or an explosion, or by repeated exposure to sounds at various levels over an extended period of time from sources such as combustion engines, electric motors, or woodworking equipment. The effects of NIHL may be immediate hearing loss that is permanent--resulting from an impulse sound that severely damages the structures of the inner ear--and may be accompanied by tinnitis. Tinnitis is a ringing, buzzing, or roaring in the ears or head. Hearing loss and tinnitis may be experienced in one or both ears. Tinnitis may continue constantly or intermittently throughout a lifetime. The damage that occurs slowly over years of continuous exposure to loud noise is accompanied by various changes in the structure of the hair cells. It also results in hearing loss and tinnitis. Both forms of hearing loss can be prevented. For the worker, hearing conservation involves engineering controls, noise monitoring and measuring, employee notification, audiometric testing and evaluation, health education, and followup that includes hearing protection and fitting and/or audiologic/otologic evaluation.[52, 53] For the public, knowledge of potentially dangerous noise, fitting and use of hearing protection, careful product selection, and audiologic/otologic evaluation are all significant factors in prevention of NIHL.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

28-17. (Developmental) Reduce noise-induced hearing loss in children and adolescents under age 17 years.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

28-18. (Developmental) Reduce adult hearing loss in the noise-exposed public.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Related Objectives From Other Focus Areas

5. Diabetes

5-13. Annual dilated eye examinations

6. Disability and Secondary Conditions

6-11. Assistive devices and technology

20. Occupational Safety and Health

20-11. Work-related, noise-induced hearing loss

Terminology

(A listing of all abbreviations and acronyms used in this publication appears in Appendix K.)

Age-related macular degeneration (AMD): Deterioration of the macula that results in a loss of sharp central vision.

Amblyopia: Developmental abnormality of the central nervous system that causes impaired vision in one or both eyes.

Assistive devices: Technical tools and devices used to aid individuals who have communication disorders in performing actions, tasks, and activities. Examples of assistive devices include alphabet boards, text telephones (TT/TTY/TDD), and text-to-speech conversion software. (See Focus Area 6. Disability and Secondary Conditions.)

Cataract: Cloudiness of the lens that may prevent a clear image from forming on the retina.

Cochlear implant: Medical device that bypasses damaged structures in the inner ear and directly stimulates the auditory nerve, allowing some deaf individuals to hear and to maintain or develop speech and language.

Cued speech: Method of communication that combines speech reading with a system of handshapes placed near the mouth to help deaf or hard-of-hearing individuals differentiate words that look similar on the lips (for example, "bunch" versus "punch") or understand words when the lips do not move (for example, "kick").

Diabetic retinopathy: Complication of diabetes that damages the retina.

Dilate: Process by which the pupil is temporarily enlarged with special eyedrops, allowing the eyecare specialist to view the fundus better.

Ear infection: See *Otitis media*.

Fundus: Interior posterior lining of the eye that includes the retina, optic nerve, and macula.

Hearing aid: Electronic device that brings amplified sound to the ear. A hearing aid usually consists of a microphone, amplifier, and receiver.

Hereditary hearing loss: Hearing loss passed down through generations of a family—that is, with a genetic basis.

Legal blindness: Determines eligibility for benefits from the Federal Government; however, it has little or no value for rehabilitation purposes.

Low vision (limited vision): A visual impairment, not correctable by standard eyeglasses or contact lenses, medication, or surgery, that interferes with an individual's ability to perform activities of daily living.

Meniere's disease: Inner ear disorder that can affect both hearing and balance and can cause episodes of vertigo, hearing loss, tinnitus, and the sensation of fullness in the ear.

Myopia: Nearsightedness, or the ability to see close objects more clearly than distant objects. Myopia may be compensated for with glasses or contact lenses.

Noise-induced hearing loss: Hearing loss that is caused by either a one-time exposure to very loud sound(s) or by repeated exposure to sounds at various loudness levels over an extended period of time. Hearing loss may be temporary or permanent.

Nonsyndromic hereditary hearing loss: Hearing loss or deafness that is inherited

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and is not associated with other inherited features.

Open angle glaucoma: Disease characterized by increased intraocular pressure that damages the optic nerve.

Optic nerve: Bundle of over 1 million nerve fibers that carry visual messages from the retina to the brain.

Oral-auditory instruction: Techniques used with persons who have hearing loss to improve their ability to speak—for example, speechreading, communication management, language and auditory skill development, and counseling.

Otitis media: Commonly called ear infection; an inflammation of the middle ear caused by viral or bacterial infection.

Otosclerosis: An abnormal growth of bone in the middle ear that results in gradual loss of hearing and affects 1 out of 100 adults in the U.S. population.

Presbycusis: Loss of hearing that gradually occurs because of inner or middle ear changes in some individuals as they grow older.

Rehabilitation: As used in this focus area, addresses the needs in daily living skills that are directly related to vision or hearing loss.

Retina: Light-sensitive layer of tissue that lines the back of the eyeball. The retina sends visual impulses through the optic nerve to the brain.

Sign language: Hand movements, gestures, and facial expressions that convey grammatical structure and meaning.

Syndromic hereditary hearing loss: Hearing loss or deafness that is inherited or passed down through generations of a family along with other features.

Tactile devices: Mechanical instruments that make use of touch to help individuals to communicate who have certain disabilities, such as deafness and blindness.

Tinnitus: Sensation of a ringing, roaring, or buzzing sound in the ears or head. Tinnitus is often associated with various forms of hearing impairment.

Visual aid: Optical and nonoptical devices that help people with low vision make use of their remaining sight.

Visual field: Entire area that can be seen when the eye is looking forward, including peripheral vision.

References

1. Teilsch, J.M.; Sommer A.; Will K., Katz J.; and Royall, R.M. Blindness and visual impairment in an American urban population. The Baltimore Eye Survey. *Archives of Ophthalmology* 108:286-290, 1990.

2. Hu, T. Economic Costs of Visual Disorders and Disabilities, Special Report to the National Eye Institute, National Institutes of Health, United States. 1981.

3. Ellwein, L. Personal communication. National Eye Institute, 1998.

4. Verbrugge, L.M., and Patrick, D.L. Seven Chronic Conditions: Their Impact on U.S. Adults' Activity Levels and Use of Medical Services. *American Journal of Public Health* 85:173-182, February 1995.

5. Ferris, I. The Early Treatment Diabetic Retinopathy Study Research Group. How Effective are Treatments for Diabetic Retinopathy? *Journal of the American Medical Association* 269(10):1290-1291, 1993.

6. American Diabetes Association: Clinical Practice Recommendations 1999. *Diabetes Care* 22(suppl.1):S70-S73, January 1999.

7. Rahmani, B.; Tielsch, J.; Katz, J.; Gottsch, J.; Quigley, H.; Javitt, J.; and Sommer, A. The Cause-Specific Prevalence of Visual Impairment in an Urban Population. The Baltimore Eye Survey. *Ophthalmology* 103(11):1721-1726, 1996.

8. Kahn, H.A., and Moorhead, H.B. Statistics on Blindness in the Model Reporting Area, 1969-70. Pub. No. (NIH) 73-427; Washington, DC: U.S. Department of Health, Education, and Welfare, Public Health Service, 1973, 120-143.

9. Sperduto, R.D.; Siegel, D.; Roberts, J.; and Rowland, M. Prevalence of Myopia in the United States. *Archives of Ophthalmology* 101(3):405-407, 1983.

10. Zadnik, K. The Glenn A. Fry Award lecture 1995. Myopia development in childhood. *Optometry and Vision Science* 74(8):603-608, 1997.

11. Levi, D.M., and Carkeet, A.C. Amblyopia: A Consequence of Abnormal Visual Development. In Simons, K. (ed.). *Early Visual Development--Normal and*

Abnormal. New York: Oxford University Press, 1993, 391-408.

12. U.S. Census Bureau. Population Projections. Retrieved November 24, 1999. <www.census.gov/population/www/projections/projections/popproj.html>.

13. Klein, B.E.K.; Klein, R.; Sponsel, W.; Franke, T.; Cantor, L.; Martone, J.; and Menage, M. Prevalence of Glaucoma, The Beaver Dam Eye Study Group. *Ophthalmology* 99(10):1499-1504, 1992.

14. Leske, M.C.; Connell, A.M.; Wu, S.Y.; Schachat, A.P.; and Hyman, L. Distribution of Intraocular Pressure, The Barbados Eye Study Group. *Archives of Ophthalmology* 1158:1051-1057, 1997.

15. National Institute of Diabetes and Digestive and Kidney Disease. *Diabetes in America*, 2nd. ed. Washington, DC: U.S. Department of Health and Human Services, National Institutes of Health, 1995.

16. Novella, A.C.; Wise, P.H.; and Kleinman, D.V. Hispanic Health. Time for Data, Time for Action. *Journal of the American Medical Association* 265(2):253-255, 1991.

17. Voo, I.; Lee, D.; and Oelrich, F. Prevalences of Ocular Conditions Among Hispanic, White, Asian and Black Immigrant Students Examined by the UCLA Mobile Eye Clinic. *Journal of the American Optometric Association* 69(4):255-261, 1998.

18. National Institute on Deafness and Other Communication Disorders. *National Strategic Research Plan: Hearing and Hearing Impairment*. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, 1996.

19. Collins, J.G. Prevalence of Selected Chronic Conditions: United States 1990-1992. National Center for Health Statistics. *Vital Health Statistics* 10(194):1-89, 1997.

20. Reports of prevalence from State programs. [Texas, 3.14 per 1000] Albright, K., and O'Neal, J. The Newborn With Hearing Loss: Detection in the Nursery. *Pediatrics* (102):142-146, 1998; [Hawaii, 1.4 per 1000] Mason, J.A., and Herrmann, K.R. Universal Infant Hearing Screening By Automated Auditory Brainstem Response Measurement. *Pediatrics* (101):221-228, February 1998; [New Jersey, 2.9 per 1,000] Barsky-Firsker, L., and Sun, S. Universal Newborn Hearing Screenings: A Three-Year Experience. *Pediatrics* 99(6):E4, 1997. [Colorado, 2.56 per 1,000] NCHAM *Sound Ideas* (2):3, 1998.

21. Yoshinaga-Itano, C., and Apuzzo, M.L. Identification of Hearing Loss After 18 Months Is Not Early Enough. *American Annals of the Deaf* 143(5):380-387, 1998.

22. Joint Committee on Infant Hearing Screening. 1994 Position Statement. *American Speech-Language-Hearing Association* 36(12):38-41, December 1994.

23. Yoshinaga-Itano, C.; Sedy, A.; Coulter, D.; and Mehl, A. Language of Early and Later-Identified Children with Hearing Loss. *Pediatrics* 102(5):1161–1171, 1998.

24. National Institute on Deafness and Other Communication Disorders. Recommendations of the NIDCD Working Group on Early Identification Hearing Impairment on Acceptable Protocols for Use in State-Wide Universal Newborn Hearing Screening Programs, 1997. <www.nih.gov/nidcd/news/97/recomnd.htm>.

25. Morton, N.E. Genetic Epidemiology of Hearing Impairment. *Annals of the New York Academy of Science* 630:16-31, 1991.

26. Bess, F.H.; Dodd-Murphy, J.; and Parker, R.A. Children With Minimal Sensorineural Hearing Loss: Prevalence, Educational Performance and Functional Status. *Ear and Hearing* (19)5:339-354, 1998.

27. American Academy of Pediatrics. Newborn and Infant Hearing Loss: Detection and Intervention. *Pediatrics* 103(2):527-530, 1999.

28. Niskar, A.S.; Kieszak, S.M.; Holmes, A.; Esteban, E.; Rubin, C.; and Brody, D.J. Prevalence of Hearing Loss Among Children 6 to 19 Years of Age—The Third National Health and Nutrition Examination Survey. *Journal of the American Medical Association* 279(14):1071-1075, 1998.

29. Gorlin, R.J.; Toriello, H.V.; and Cohen, M.M. Hereditary Hearing Loss and Its Syndromes. New York: Oxford University Press, 1995.

30. Van Camp, G., and Smith, R.J.H. Hereditary Hearing Loss Homepage. <http://dnalab0www.uia.ac.be/dnalab/hhh>, and Morton, N.E. Genetic Epidemiology of Hearing Impairment. *Annals of New York Academy of Science* 630:16-31, 1991.

31. National Institute on Deafness and Other Communication Disorders. *Because You Asked About Meniere's Disease*. U.S. Department of Health and Human Services, 1998, 1-7.

32. Schappert, S.M. Office Visits for Otitis Media: United States, 1975–90. Advance Data 13(137):17, 1992.

33. Freid, V.M.; Makuc, D.M.; and Rooks, R.N. Ambulatory Health Care Visits by Children: Principal Diagnosis and Place of Visit. National Center for Health Statistics. *Vital and Health Statistics* 13(137):17, 1-23, 1998.

34. Alsarraf, R.; Jung, C.J.; Perkins, J.; Crowley, C.; and Gates, G.A. Otitis Media Health Status Evaluation: A Pilot Study for the Investigation of Cost-Effective Outcomes of Recurrent Acute Otitis Media Treatment. *Annals of Otology, Rhinology and Laryngology* 107(2):120-128, 1998.

35. National Institute on Deafness and Other Communication Disorders. *Fact Sheet on Noise-Induced Hearing Loss.* Washington, DC: U.S. Department of Health and Human Services, 1998.

36. National Institute on Occupational Safety and Health. *Fact Sheet: Work-Related Hearing Loss.* Washington, DC: U.S. Department of Health and Human Services, 1999.

37. Lusk, S.L.; Kerr, M.J.; and Kauffman, S.A. Use of Hearing Protection and Perceptions of Noise Exposure and Hearing Loss Among Construction Workers. *American Industrial Hygiene Association Journal* 59:566-570, 1998.

38. Franks, J.R. Analysis of Audiograms for a Large Cohort of Noise-Exposed Miners. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Division of Biomedical and Behavioral Science, 1996.

39. Mine Safety and Health Administration. Health Standards for Occupational Noise Exposure in Coal, Metal, and Nonmetal Mines: Proposed Rule. *Federal Register* 61:243:66347-66397, December 17, 1996.

40. Wallhagen, M.I.; Strawbridge, W.J.; Cohen, R.D.; and Kaplan, G.A. An Increasing Prevalence of Hearing Impairment and Associated Risk Factors Over Three Decades of the Alameda County Study. *American Journal of Public Health* 87(3):440-442, 1997.

41. U.S. Department of Health and Human Services, National Institute on Deafness and Other Communication Disorders. *Economic and Social Realities of Communication Difference and Disorder.* Bethesda, MD: National Institutes of Health, 1998.

42. Kelly, L.P. Using Silent Motion Pictures to Teach Complex Syntax to Adult Deaf Readers. *Journal of Deaf Studies and Deaf Education* 3(3):217-230, 1998.

43. Steinburg, A.G. Issues in providing mental health services to hearing-impaired persons. *Hospital & Community Psychiatry* 42(4):380-389, 1991.

44. Steinburg, A.G.; Sullivan, V.J.; and Montoya, L.A. Lipreading the stirrups: An investigation of deaf women's perspectives of their health, health care, and providers. Paper presented at National Health Service Corps 25th Anniversary Meeting in Washington, DC, in 1998.

45. Gates, G.A.; Cooper, Jr., J.C. Jr; Kannel, W.B.; and Miller, N.J. Hearing in the Elderly: The Framingham Cohort, 1983–1985. Part I. Basic audiometric test results. *Ear and Hearing* 11(4):247-256, 1990.

46. Cruickshanks, K.J.; Wiley, T.L.; Tweed, T.S.; Klein, B.E.; Klein, R.; Mares-Perlman, J.A.M.; and Nondahl, D.M. Prevalence of Hearing Loss in Older Adults in Beaver Dam, Wisconsin: The Epidemiology of Hearing Loss Study. *American Journal of Epidemiology* 148(9):879-886, 1998.

47. Popelka, M.M.; Cruickshanks, K.J.; Wiley, T.L.; Tweed, T.S.; Klein, B.E.; and Klein, R. Low Prevalence of Hearing Aid Use Among Older Adults with Hearing Loss: the Epidemiology of Hearing Loss Study. *Journal of the American Geriatrics Society* 46(9):1075-1078, 1998.

48. Klein, R.; Cruickshanks, K.F.; Klein, B.E.K.; Nondahl, D.M.; and Wiley, T. Is Age-Related Maculopathy Related to Hearing Loss? *Archives of Ophthalmology* 116(3):360-365, 1998.

49. National Institute on Deafness and Other Communication Disorders. WISE EARS. Retrieved December 15, 1999 www.nih.gov/nidcd/health/wise.

50. Ries, P.W. Prevalence and Characteristics of Persons with Hearing Trouble, United States, 1990-91. National Center for Health Statistics. *Vital and Health Statistics* 10(188), 1994.

51. American Speech-Language-Hearing Association. *Guidelines for Audiologic Screening.* Rockville, MD: the Association, 1997.

52. Lusk, S.L.; Kerr, J.J.; Ronis, R.L.; and Eakin, B.L. Applying the Health Promotion Model to Development of a Worksite Intervention. *American*

Journal of Health Promotion 13(4):219-227, 1999.

53. Lusk, S.L.; Hogan, M.M.; and Ronis, D.L. Test of the Health Promotion Model as a Causal Model of Construction Workers' Use of Hearing Protection. *Research in Nursing & Health* 20(3):183-194, 1997.

Healthy People 2010

Tracking
Healthy People 2010

Introduction

Healthy People 2010 presents 467 objectives to improve the health of Americans by the year 2010. Because these objectives are national, not solely Federal, the achievement of these objectives is dependent in part on the ability of health agencies at all levels of the government and on non-governmental organizations to assess objective progress. Systematically collecting, analyzing, interpreting, disseminating, and using health data is essential to understanding the health status of a population, to assessing progress, and to planning effective prevention programs. Therefore, data are the foundation of Healthy People objectives. Although the United States Department of Health and Human Services takes the lead role in national health data collection, it is only one partner within the larger structure necessary to collect information on the status and factors affecting the health of the population. The purpose of *Tracking Healthy People 2010* is to provide technical information so the many partners in this effort understand how the data are derived and the major statistical issues affecting the interpretation of the statistics.

The production of this document was made possible through collaboration with the workgroup coordinators for each of the focus areas (see Appendix E). *Tracking Healthy People 2010* is organized into three sections.

The General Data Issues section discusses issues that affect many objectives. This section includes important U.S. and international statistical practices that impact on the definitions for the objectives and on the ability to collect relevant information. One example is the recommendation to change the age-adjustment standard population weights for mortality and other data from various standards previously used to the year 2000 U.S. standard population weights. Appendix H presents a comparison of rates for the age-adjusted mortality objectives adjusted to the previously used 1940 standard and the 2000 standard.

Data for the national Healthy People 2010 objectives come from 190 data sources. The Major Health Data Sources section describes characteristics of the major data systems used for *Healthy People 2010*. These characteristics are important considerations for others trying to develop similar data sources or trying to use the data sources for other purposes, such as the calculation of statistics for other select populations.

Operational Definitions will be provided for each of the Healthy People 2010 objectives. The purpose of these definitions is to give the necessary technical information so the statistics can be reproduced for the national populations and comparable statistics can be calculated for other populations. The Operational Definitions section is not contained in this Conference Edition. It will be included in the second printing later this year.

General Data Issues

1

Target Setting and Assessing Progress for Measurable Objectives

Target Setting Methods

One of the three overarching goals for the Healthy People 2000 prevention initiative was to reduce health disparities among Americans.[1] The framework of Healthy People 2010 has taken this a step further by proposing to "eliminate health disparities" as one of the two primary goals for the next decade.

To support this goal of eliminating health disparities, in *Healthy People 2010*, one national target that is applicable to all select populations has been set for each measurable, population-based objective. The targets have been set so that there is an improvement for all racial/ethnic segments of the population (i.e., the target is set "better than the best" racial/ethnic subgroup shown for the objective) for objectives that address risk factors, and health services and protection (e.g., access to prenatal care, health insurance coverage, etc.). For those objectives that can be influenced in the short term by policy decisions, lifestyle choices, and behaviors (e.g., physical activity, diet, smoking, suicide, alcohol-related motor vehicle deaths, etc.), the target setting method is also "better than the best" group.

For objectives that are unlikely to achieve an equal health outcome in the next decade, regardless of the level of investment (e.g., occupational exposure and resultant lung cancer), the target represents an improvement for a substantial proportion of the population and is regarded as a minimum acceptable level. Implicit in setting targets for these objectives is the recognition that population groups with baseline rates already better than the identified target should continue to improve.

Beyond this general guidance, the exact target levels were determined by the lead agency workgroups that developed the objectives. The workgroups used various methods for arriving at the target levels, including retaining the year 2000 target, computing a statistical regression using current rates to project a target, knowledge of the programs currently in place and expected change, and expert judgment. The specific method for developing the target is described under each objective in *Healthy People 2010: Objectives for Improving Health.*

Assessing Progress

Most objectives are tracked by a single measure. For these objectives, progress will be assessed by the change from the baseline measure toward the target. Some objectives seek to increase positive behaviors or outcomes while others are stated in terms of decreasing negative behaviors or outcomes. A number of objectives contain multiple measures (compound objectives). Progress will be assessed separately for each measure. For these objectives, therefore, the progress may be mixed if some measures are progressing toward the target and others are regressing. Whenever possible, assessment of progress should consider the standard errors associated with the data (see section 9: Variability of Estimates).

For some objectives, precise measures that match the objective are not available. In these cases, similar proxy measures may be used to track progress. The tracking data and methods for assessing progress will be reviewed during the mid-course review in 2005 and a determination will be made at that time whether any changes will be made.

Reference

1. U.S. Department of Health and Human Services. Healthy people 2000: National health promotion and disease prevention objectives. Washington: Public Health Service. 1991.

2
Developmental Objectives

Developmental objectives are those that currently do not have national baseline data (see Reader's Guide section in *Objectives for Improving Health*) and, therefore, currently have no operational definitions. Some objectives that propose several measures (also called "compound objectives") may have parts that are developmental. Developmental objectives indicate areas that need to be placed on the national agenda for data collection. They address subjects of sufficient national importance where investments should be made over the next decade to measure their change.

A potential data source has been identified for all developmental objectives. These sources, along with other information, will be discussed in the operational definitions under "Comment(s)." As data are developed and become available for these objectives, operational definitions will be disseminated on the Internet and/or in Healthy People publications. No targets have been set for developmental objectives; targets will be proposed at the mid-course review for those developmental objectives that have baseline data.

3
Population Estimates

Healthy People 2010 uses population estimates from the U.S. Bureau of the Census to calculate morbidity and mortality rates for many of the objectives. Every 10 years, the Census Bureau conducts a full census of the resident population of the United States, Puerto Rico, and U.S. territories, and collects data on gender, race, age, and marital status; the estimates produced represent the U.S. population as of April 1 of the census year. More detailed data on education, housing, occupation, income, and other information are also collected from a representative sample of the population (about 17 percent of the total population).[1]

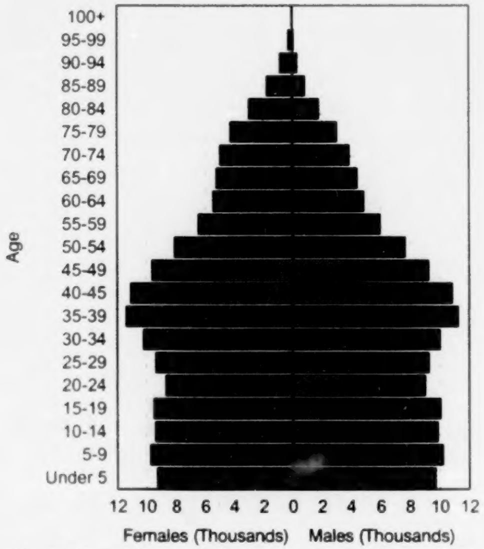
The increasing diversity of the population has necessitated modification of the way race data are collected. In both the 1980 and 1990 censuses, a substantial number of persons did not specify a racial group that could be classified as any of the white, black, American Indian, Eskimo, Aleut, Asian, or Pacific Islander categories on the census form.[2] In 1980, the number of persons of "other" race was nearly 7 million; in 1990 it was almost 10 million. In both censuses, the large majority of these persons were of Hispanic origin (based on response to a separate question on the form), and many wrote in their Hispanic origin, or Hispanic origin type (for example, Mexican, Puerto Rican) as their race.

The Bureau of the Census presents population data by race in two different ways. In decennial Census publications, persons of unspecified race are maintained in the single category of "other." For the purpose of providing comparable denominator data to data systems, in both 1980 and 1990 the Bureau of the Census produced another set of population estimates for census years in which persons of unspecified race were allocated to one of the four tabulated racial groups (white, black, American Indian or Alaska Native, Asian or Pacific Islander), based on their response to the Hispanic question. These four race categories conform with Office of Management and Budget (OMB) Directive 15 and are more consistent with the race categories used in most major data systems, including vital statistics.[3] The post-censal and inter-censal population estimates described below are based on the "OMB consistent" populations.

Post-censal population estimates

National population estimates for the years after the decennial census (post-censal estimates) are calculated using the decennial census as the base population and adjusting those counts using the following measures of population change: births and deaths (provided by the National Center for Health Statistics), immigration data (provided by the Immigration and Naturalization Service), data on the movement of Armed Forces personnel (from the Department of Defense), movement between Puerto Rico and the U.S. mainland (from Puerto Rico Planning Board), and movement of Federal employees abroad (from the Office of Personnel Management and the Department of Defense). These estimates reflect the U.S. population as of July 1 of each year (see figure 1). Post-censal estimates for State and county populations are also calculated using these data, as well as data from the Internal Revenue Service and State departments of education. Post-censal estimates become less accurate as the date of the estimates moves farther from the date of the census.

Figure 1. Resident population by age and gender: United States, 1998



Total female population = 138,252,000 Total male population = 132,046,000

Source: U.S. Bureau of the Census, Population Estimates Program

Inter-censal estimates

After the decennial population census, inter-censal estimates for the preceding decade are calculated to replace post-censal estimates. These estimates reflect the population as of July 1. Inter-censal estimates are more accurate than post-censal estimates because they incorporate data from the enumerations at the beginning and end of the decade. The inter-censal estimates for the 1980s were used to revise some of the baselines in *Healthy People 2000*; these were published in the *Healthy People 2000 Midcourse Review and 1995 Revisions*.[4] The method that will be used to calculate inter-censal estimates for the decade between 1990 and 2000 has not been developed because of the change in race/ethnicity data that will be collected in the year 2000 census (see section 4: Population Template). However, when the inter-censal estimates for the decade become available, they will be used to recalculate some of the morbidity and mortality data for Healthy People 2010 baselines and tracking data for data years prior to the year 2000.

Population undercounts

Some subgroups of the population (including some racial, ethnic, and age groups) are less likely than other groups to be completely enumerated in the decennial census. The undercounts of these groups lower the denominators and result in higher morbidity and mortality rates for these populations.[5] The Census Bureau makes estimates of net census undercount for the total, white, and black or African American populations by age. These estimates are then used to weight the population denominators used by most of the national health surveys, including National Health Interview Survey (NHIS), National Health and Nutrition Examination Survey (NHANES), the National Survey of Family Growth (NSFG), and the National Health Care Surveys. The National Vital Statistics System (mortality and natality) use population denominators that are not adjusted for net census undercount.

Several types of population denominators are used for Healthy People 2010 objectives:

Resident Population

The resident population includes all persons whose usual place of residence is in one of the 50 States or the District of Columbia, including Armed Forces personnel stationed in the United States. The resident population is usually the denominator when calculating birth and death rates from the National Vital Statistics System (NVSS) and incidence of disease rates from a number of data systems. The resident population is also the denominator for selected population-based rates that use numerator data from the National Nursing Home Survey (NNHS).

Civilian population

The civilian population is the resident population, excluding members of the Armed Forces (though their family members are included). The civilian population is the denominator for other Healthy People 2010 data sources, such as the National Hospital Discharge Survey (NHDS).

Civilian noninstitutionalized population

The civilian noninstitutionalized population is the civilian population not residing in institutions (e.g., correctional facilities, psychiatric hospitals, and nursing homes). This population is the denominator for rates from Healthy People data sources such as the National Ambulatory Medical Care Survey (NAMCS) and the

National Hospital Ambulatory Care Survey (NHAMCS). This population is also used in the weighting procedure to produce national estimates from health surveys such as NHIS, NHANES, and the National Household Survey on Drug Abuse (NHSDA).

Details on specific denominators for each major Healthy People 2010 data system can be found in the data source tables included in the Major Data Sources section.

References

1. Detailed information on the methodology used to collect census data is available from their website, http://www.census.gov

2. U.S. Bureau of the Census. U.S. population estimates, by age, gender, race and Hispanic origin, 1980-91. Current population reports; series P-25, no 1095. Washington: U.S. Department of Commerce. 1992.

3. National Center for Health Statistics. Vital Statistics of the United States, 1992, Vol I Natality, technical appendix. Washington: Public Health Service. 1996.

4. Public Health Service, Department of Health and Human Services, Healthy People 2000 Midcourse Review and 1995 Revisions. Washington, DC. 1995.

5. For a discussion of the effect of population undercount on vital statistics rates, see the "Technical Appendix to Vital Statistics of the United States, 1991, Vol II Mortality, Part A" and Rosenberg, HM, Maurer, JD, Sorlie, PD, Johnson, NJ, et al. Quality of death rates by race and Hispanic origin: A summary of current research, 1999. National Center for Health Statistics. Vital Health Stat 2(128). 1999.

4
Population Template

Minimum template

During the review of the September 1998 *Healthy People 2010 Draft for Public Comment*,[1] the need for greater consistency in tracking population groups became apparent. To address this issue, a minimum template for all Healthy People 2010 population-based objectives was adopted. Population-based objectives may show more detailed and additional breakouts if appropriate.

This minimum select population template applies to most currently measurable population-based objectives and will be applied to developmental objectives (see section 2: Developmental Objectives) when data become available. The template does not apply to non-population-based objectives such as those that measure schools, worksites, or States. Because of problems in interpreting risk, the template is also not shown for population-based measurable objectives that are tracked using counts of events rather than rates or percents.

Race:
  American Indian or Alaska Native
  Asian or Pacific Islander
    Asian
    Native Hawaiian or Other Pacific Islander
  Black or African American
  White
Hispanic origin and race:
  Hispanic or Latino
  Not Hispanic or Latino
    Black or African American
    White
Gender:
  Female
  Male
Socioeconomic status:

Family income level-	or	Education level-
Poor		Less than high school
Near poor		High school graduate
Middle/high income		At least some college

The groups listed under most headings (race, Hispanic origin, gender, and income) in the minimum template are comprehensive; that is, they are intended to sum to the population tracked by the objective. For example, the three groups under income equal the total population tracked by the objective. The exception is the education category, which is limited to people of a minimum age or, in some cases, a maximum age (see Socioeconomic Status discussion below). The groups listed under the subheading "Not Hispanic or Latino" are not inclusive.

If data are not provided for a group, this is indicated by one of four statements: data have not been analyzed (DNA), data are not collected (DNC), data are statistically unreliable (DSU), or not applicable (NA). In cases where data for the entire template are not collected by the data system tracking the objective, a note to this effect will replace the template.

Race and Hispanic origin

OMB classification

On October 30, 1997, the Office of Management and Budget (OMB) published "Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity" (Federal Register, 62 FR 58781- 58790).[2] The new standards revise OMB Directive No. 15, adopted on May 12, 1977, and modify the data collection policy, making it possible for Federal agencies to collect information that reflects the increasing diversity of our Nation's population stemming from growth in interracial marriages and immigration. As a result, the ways that data on race are tabulated and analyzed also will become more complex. Draft provisional tabulation guidelines, posted on the Internet at http://www.whitehouse.gov/WH/EOP/OMB/html/misc-doc.html, provide options for tabulating and for bridging between data collected under the old and new standards.[3]

The new standards will be used by the U.S. Bureau of the Census in the 2000 decennial census. Other Federal programs are adopting the standards as soon as possible, but not later than January 1, 2003, for use in household surveys, administrative forms and records, and other data collections.

OMB Directive No. 15, still in effect as tracking of the Healthy People 2010 objectives begins, defined the basic racial and Hispanic origin categories for Federal statistics and program administrative reporting as American Indian or Alaska Native; Asian or Pacific Islander; Black; White; and Hispanic.[4] The distribution of the U.S. population in 1998 by race and Hispanic origin is shown in figures 2 and 3, respectively, using the OMB Directive No. 15 categories. Although baselines and the first few years of tracking are guided by OMB 15, sometime during the decade the race and Hispanic origin classifications for objectives will change. Change in the categories is not expected to happen all at once, but will be implemented incrementally as data systems adopt the new standards and, if applicable, denominator data from the Bureau of the Census for rates and percentages become available.

The major changes to the reporting of data on race and Hispanic origin under the new guidelines are (1) the instruction to "mark one or more" racial categories, and (2) the dividing of the "Asian or Pacific Islander" category into two separate categories— "Asian" and "Native Hawaiian or Other Pacific Islander." The new OMB guidelines also call for tabulating data for multiple races. Because these guidelines have generally not yet been implemented by most major health data systems, data for more than one race are not shown. When data are available for more than one race for most of the major Healthy People 2010 data systems, they will be included in the tracking data. Also, most data systems currently do not produce data for the detailed Asian or Pacific Islander populations. Until data are tabulated for these groups, they will be shown as not collected.

Other changes include (1) "Hispanic" origin has been replaced by "Hispanic or Latino," (the preference remains for collecting these data in a separate question, the way it is presently being done on most Federal data collection forms), (2) Central and South American Indians, formerly not included in the "American Indian" category, are now included, and (3) the former "Black" category is replaced by "Black or African American." Race and Hispanic origin may be reported in more detail for some objectives, subject to satisfying agency criteria for statistical reliability and confidentiality. For example, "Puerto Rican," "Mexican," and "Cuban" may be reported separately within the "Hispanic or Latino" group.

Under the new policy, agencies are required to offer respondents the option of selecting one or more of the following five racial categories included in the updated standards:

- ☐ **American Indian or Alaska Native**. A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

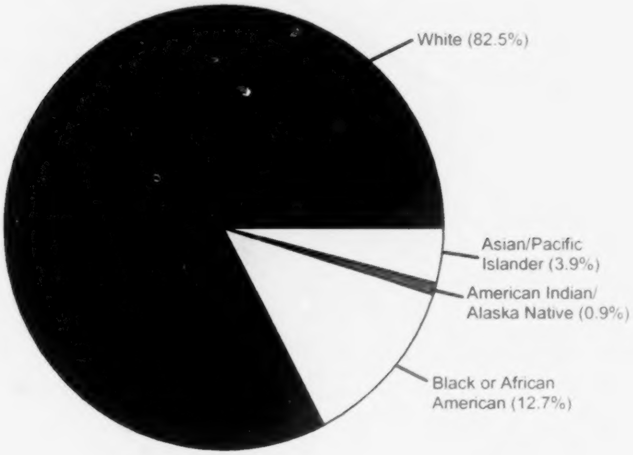
- ☐ **Asian**. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

- ☐ **Black or African American**. A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."

- ☐ **Native Hawaiian or Other Pacific Islander**. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

- ☐ **White**. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Figure 2. Resident population estimates by race: United States, 1998



Percents based on total population = 270,299,000

Source: U.S. Bureau of the Census, Population Estimates Program

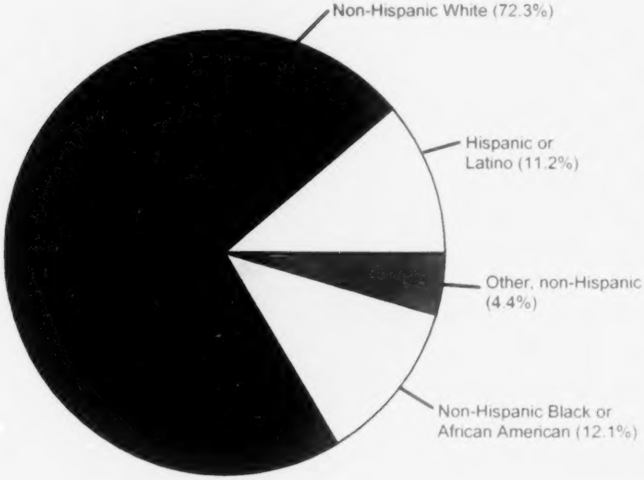
These five categories are the minimum set for data on race for Federal statistics, program administrative reporting, and civil rights compliance reporting. The new standards explicitly do not include an "other race" category for data collection; an "other" category may be used for tabulating and data reporting.[3] Issues related to an "other" race categories for census population data are discussed in section 3: Population estimates. For *Healthy People 2010* the designation "African American" will be used interchangeably with "Black or African American."

The standards require that at a minimum the total number of persons identifying with more than one race be reported. It is stressed that this is a minimum; the presentation of detailed information on specific racial combinations subject to constraints of data reliability and confidentiality standards is preferred. Based on preliminary research, it is estimated that less than 2 percent of the Nation's total population is likely to identify with more than one race.[3] Over time, this percentage may increase as those who identify with more than one race become aware of the opportunity to report more than one race group.

The standards regarding Hispanic origin provide for the collection of data on whether or not a person is of "Hispanic or Latino" culture or origin. This category is defined as follows:

Hispanic or Latino. A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. The term, "Spanish origin," can be used in addition to "Hispanic or Latino." Persons of Hispanic origin may be of any race and persons in the various race groups may be of any origin, where specified.

Figure 3. Resident population by Hispanic origin:
United States, 1998



Percents based on total population = 270,299,000

Source: U.S. Bureau of the Census, Population Estimates Program

Misreporting racial and ethnic data

Most health survey and Census population data use the self-reported race of the respondent, which is considered the most accurate representation of a person's racial or ethnic background. However, some data systems, such as the National Vital Statistics System (mortality), do not collect self-reported race or ethnicity of the decedent or patient. In other systems, such as those derived from hospital/patient care records, it is often unclear whether the information is self-reported. In these cases, race and ethnicity may be entered by someone else (clerical staff, hospital personnel, etc.) based on the report of proxy respondents or by observation. Several of these data systems are discussed below.

National Vital Statistics System (Mortality)

Death rates by race and Hispanic origin may be biased from misreporting of race and Hispanic origin in the numerator of the rates and misreporting and undercoverage in the denominator of the rates.[5] Numerator information is from the death certificate as reported by the funeral director based on information from an informant, usually a family member[6]; while denominator information, from surveys or the Census of Population, is either self-reported or is reported by a member of the household. Based on comparisons of death certificate information with that from independent sources such as the Current Population Survey, the quality of reporting of race and Hispanic origin on the death certificate is good for the white and African American populations; however, reporting of other groups may be seriously under-reported.[7] Additional reporting problems, such as net census undercount (see section 3: Population estimates), affect population counts and estimates.[8] As a consequence of the combined effect of numerator and denominator biases, it has been estimated that death rates for the white population are overestimated by about 1 percent and for the African American population by about 5 percent; and are underestimated for the American Indian or Alaska Native population by 21 percent; Asian or Pacific Islanders, 11 percent; and Hispanics, 2 percent.[5] For *Healthy People 2010*, infant mortality rates for races and ethnic populations are based on linked files of infant deaths and live births.[9] These rates use the race of mother as self-reported on the birth certificate and, therefore, are not affected by the misreporting of race on the death certificate.

Patient care data

Data from systems that use patient records such as the National Hospital Discharge Survey (NHDS), the National Ambulatory Medical Care Survey, the National Hospital Ambulatory Medical Care Survey, the National Notifiable Disease Surveillance System, the HIV/AIDS Surveillance System, etc., also may misreport the race of individuals. It is often unclear how race and ethnicity are reported in these systems. The race and ethnicity of the patient may be reported by hospital or other medical care personnel by observation, by proxy report, or by the patient. Therefore, one must use information on race and ethnicity from these systems with caution.

Missing data

In addition to the problems of misreporting race and ethnicity, the information on race reported by some data systems are often missing or incomplete. Some of these systems are described below. Specific information on the quality and completeness of reporting of race and ethnicity for the major Healthy People 2010 data systems is included, where available, in the data source description in the Major Data Sources section.

National Hospital Discharge Survey

Race is not reported in about 18 percent of National Hospital Discharge Survey (NHDS) records since data on race are not reported by many hospitals due to the omission of a race field on hospital discharge reporting forms.[10] More hospitals have automated their discharge systems in recent years and are currently using form UB-92 which does not require race reporting. A comparison of NHDS data with data on persons who reported being hospitalized in the National Health Interview Survey (NHIS) (NHIS data were adjusted to exclude hospitalizations of 1 day or less) indicated that underreporting for the white patients was about 22 percent in 1991; the difference for African Americans was negligible.[10] Hispanic origin is not reported for 85 percent of the NHDS records.

Ambulatory Medical Care Surveys

For the National Ambulatory Medical Care Survey and the National Hospital Ambulatory Care Survey, race is not reported for about 11 percent of records.

National Notifiable Disease Surveillance System

Although staff in State health departments and at CDC attempt to obtain complete demographic information associated with nationally notifiable cases of disease, some data (particularly for the variables of race and ethnicity) are not available for some cases of disease. Laws, regulations, and mandates for public health reporting (including specific data items that are reported) fall under the authority of individual States, and in some States, race and ethnicity may not be approved for reporting to the national level. Race and ethnicity data may also be unknown when cases are reported from a laboratory or when cases are reported as aggregate disease totals.

Socioeconomic status

One of the three overarching goals for the Healthy People 2000 prevention initiative was to reduce health disparities among Americans.[11] The proposed framework of *Healthy People 2010* has taken this a step further by proposing to "eliminate health disparities" as one of the two primary goals for the next decade. While disparities among racial and ethnic groups—especially between whites and African Americans—have received considerable attention over the last decade, differential health outcomes and access to social and health care resources often reflect differences in education, occupation, income, and wealth. Monitoring progress toward eliminating social and economic disparities in health over the next decade will require improved collection and use of standardized data on the socioeconomic status of individuals.

Socioeconomic status (SES) may be represented by income, level of education, or type of occupation. *Healthy People 2010* primarily uses education and income-related measures. The following discussion presents data issues for income and education measures.

Income

Income is the most common measure of socioeconomic status, and is probably the most relevant to health policy formulation. Current income provides a direct measure of the quality of food, housing, leisure-time amenities, and health care an individual is able to acquire, as well as reflecting the relative position in society. However, income may fluctuate over time so that income received in a given year may not accurately reflect one's lifetime income stream or total wealth, the measures of resources more relevant to health. For example, elderly persons who have low incomes may also have accumulated assets that offset their need for a high annual income. Of particular importance in considering the relationship between income and health is the fact that income may be low because illness has limited the amount of income earned or prevented earning income entirely. The use of income as a measure of SES also involves more practical difficulties. In many heath surveys a substantial number of persons either do not know or refuse to report their incomes.[12]

For most objectives, income reflects total family income for a given reference period, usually the previous 12 months or last calendar year. However, some data systems, such as the Continuing Survey of Food Intakes by Individuals (CSFII), use the income of the household (which includes income of unrelated household members). These systems generally require household income for program purposes. When household income is used instead of family income this is noted in the template for the objective.

When income is selected for the template, poor, near poor, and middle/high income categories are used unless overridden by programmatic or data considerations (for example, Women, Infants, and Children (WIC) eligibility). In these special cases, the poverty categories appropriate for the program or system are used. For most health surveys, income is defined as money income before taxes and does not include the value of non-cash benefits such as food stamps, Medicare, Medicaid, public housing, and employer-provided fringe benefits.

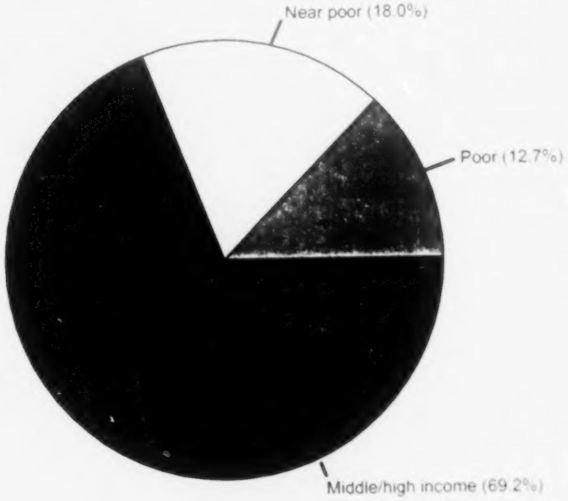
Family Income Level

Converting income to poverty status adjusts for family size and inflation, facilitating comparisons among groups and over time. Poverty status measures family income relative to family size using the poverty thresholds developed by the U.S. Bureau of the Census, based on definitions originally developed by the Social Security Administration. These thresholds vary by family size and composition and are updated annually to reflect changes in the Consumer

Price Index for all urban consumers. Families or individuals with income below their appropriate thresholds are classified as below the poverty level. Focusing simply on the dichotomy of "above" versus "below" poverty, however, obscures the full gradient of inequalities in income distribution and in health. Understanding burden across the income gradient provides information useful for potential eligibility expansions or other programmatic modifications. For Healthy People 2010, the three categories of family level income that are primarily used are (see figure 4 for the distribution of population by poverty status):

- ☐ Poor (below the Federal poverty level),
- ☐ Near poor (100-199% of the Federal poverty level), and
- ☐ Middle and high income (200% or more of the Federal poverty level)

Figure 4. Population distribution by poverty status:
United States, 1998



Percents based on total population = 271,059,000

Source: U.S. Bureau of the Census, Current Population Reports

For a family of four, the average Federal poverty level weighted for family composition was $16,813 in 1998. Table 1 shows the 1998 poverty thresholds by size of family and number of related children under 18 years.

Table 1. Poverty thresholds in 1998, by size of family and number of related children under 18 years

Size of Family Unit	Related children under 18 years								
	None	1	2	3	4	5	6	7	8
One person									
Under 65 years	8,480								
65 years and over	7,818								
Two persons									
Householder under 65 years	10,915	11,235							
Householder 65 years and older	9,853	11,193							
Three persons	12,750	13,120	13,133						
Four persons	16,813	17,088	16,530	16,588					
Five persons	20,275	20,570	19,940	19,453	19,155				
Six persons	23,320	23,413	22,930	22,468	21,780	21,373			
Seven persons	26,833	27,000	26,423	26,020	25,270	24,395	23,435		
Eight persons	30,010	30,275	29,730	29,253	28,575	27,715	26,820	26,593	
Nine persons or more	36,100	36,275	35,793	35,388	34,723	33,808	32,980	32,775	31,513

Note: Numbers represent income in U.S. dollars.

Source: U.S. Bureau of the Census

In addition to the limitations discussed for income, converting income to poverty status introduces other issues that need to be considered. If income data are collected by selecting an appropriate income category, rather than giving the actual dollar amount, then the conversion to poverty status must be performed using category means or medians and will thus result in some misclassification.

The process of setting the official poverty definitions is currently being reevaluated. In 1990, the National Academy of Sciences/National Research Council (NRC) was requested by a committee of the U.S. Congress to conduct a study of the official poverty measure. In the final report issued in 1995, the NRC's Panel on Poverty and Family Assistance proposed a new approach for developing an operational definition of poverty. The proposed poverty measure would incorporate more broadly defined thresholds and a new definition of family resources (income) that includes the value of non-cash benefits such as food stamps, Medicare, Medicaid, public housing, and employer-provided fringe benefits and deducts work-related and medical expenses. The Census Bureau is currently conducting an extensive examination of the Panel's recommendations and alternative procedures. Revising the official U.S. poverty measure could have implications for data collection and trend analysis in Healthy People 2010.

Education

Education is frequently used as the measure of SES in presentations of health data. There are several reasons for this preference. Education is generally more completely reported than income; usually 95 percent or more of respondents report their attained level of education. Unlike occupation, all adults may be characterized by their education level. Education, unlike income or occupation, remains fixed for most people after the age of 25 and usually is not influenced by health. In addition, education is highly related to both income and occupation.

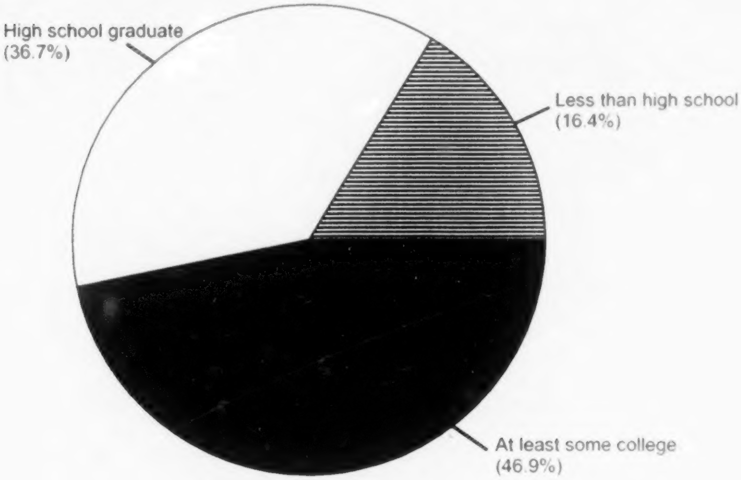
Education cannot be used to characterize the socioeconomic position of children (except through the educational level of parents or head of household), and the average education level of the U.S. population has increased steadily over time, complicating comparisons across age groups. Between 1971 and 1997, the educational attainment of persons aged 25 to 29 years completing high school rose from 78 to 87 percent; the percent with some college rose from 44 to 65 percent; and the percent with 4 or more years of college rose from 22 to 32 percent.[13]

Educational attainment is typically measured either by the number of years of education the individual has completed or by the highest credential received (see figure 5). The categories for educational attainment that are primarily used in *Healthy People 2010* are:

- ☐ Less than high school (persons with less than 12 years of schooling or no high school diploma),
- ☐ High school graduate (persons with either 12 years of schooling, a high school diploma, or general equivalency diploma (GED)), and
- ☐ At least some college (persons with a high school diploma or GED and 13 or more years of schooling).

In general, data on educational attainment are presented for ages beginning with 25 years, consistent with guidance given by the U.S. Bureau of the Census. However, objectives using different data systems may have different age groups for the education variable. The actual ages that are used to calculate educational attainment for the major Healthy People 2010 data systems are shown in Table 2. Because of the requirements of the different data systems, the age groups used to calculate educational attainment for an objective may differ from the age groups used to report the data for other select populations and the overall measure of the same objective. For clarity, each objective in *Healthy People 2010* states the age groups used to measure the levels in the educational attainment category and caution must be used in comparing the data by educational attainment with data for the main objective and other select populations.

Figure 5. Educational attainment for the noninstitutionalized population 25 years and older: United States, 1998



Percents based on total population, 25 years and older = 172,211,000

Source: U.S. Bureau of the Census, Current Population Survey

Table 2. Healthy People 2010 Data Systems and Ages Used to Report Educational Attainment

Data System	Ages used to report educational attainment
Behavioral Risk Factor Surveillance System (BRFSS)	25 years and older
National Health and Nutrition Examination Survey (NHANES)	25 years and older (unless otherwise noted)
National Health Interview Survey (NHIS)	25 years and older
National Survey of Family Growth (NSFG)	22–44 years
National Vital Statistics System—Mortality (NVSS-M)	25–64 years
National Vital Statistics System—Natality and Linked (NVSS-N and NVSS-L)	20 years and older
National Household Survey on Drug Abuse (NHSDA)	18 years and older

Healthy People 2010 baseline education data for the mortality objectives are based on reports from 46 States and the District of Columbia. Mortality statistics do not report data by education for the elderly population (65 years and older) because the percent with "education not stated" is higher for this group and because of possible bias due to misreporting of education on the death certificate. Misreporting of education on the death certificate tends to overstate the death rate for high school graduates (12 years of education) because there is a tendency for some people who did not graduate from high school to be reported as high school graduates on the death certificate; by extension, the death rate for the group with less than 12 years of education tends to be understated.[14]

Other Population Groups

Several other groups were considered for inclusion in the minimum set of select populations but were left to the discretion of the workgroups to include for specific objectives as appropriate. These groups included urban/rural residence, health insurance status, disability status, age, sexual orientation, the institutionalized population, and immigrant status, some of which are discussed in greater detail below. Some objectives also include select populations of persons with specific conditions—such as persons with diabetes, persons with hypertension, and persons with arthritis.

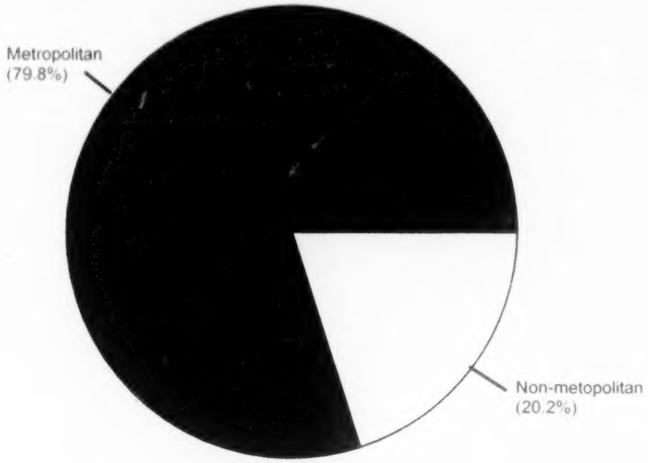
Urbanization

Urban residence in *Healthy People 2010* is specified as either residing within a metropolitan statistical area (MSA) or residing within an urbanized area (UA) or urban place (called "urban" in the template) as designated by the U.S. Bureau of the Census (see figure 6 for a distribution of population by residence).

Urban

Urban residence is defined as people living within the boundaries of an UA and the urban portion of places outside an UA that have a decennial census population of 2,500 or more. An UA is an area consisting of a central place(s) and adjacent urban fringe that together have a minimum residential population of at least 50,000 people and generally an overall population density of at least 1,000 people per square mile of land area. The U.S. Bureau of the Census uses published criteria to determine the qualification and boundaries of UA's. For more information see the Census website at http://www.census.gov/geo/www/tiger/glossary.htm.

Figure 6. Persons living in metropolitan and non-metropolitan areas: United States, 1996



Percents based on total population = 265,284,000
Metropolitan defined as people living in metropolitan statistical areas.

Source: U.S. Bureau of the Census, Population Estimates Program

Metropolitan Statistical Areas (MSA's)

Metropolitan statistical areas (MSA's) are established by the U.S. Office of Management and Budget (see figure 6). The MSA standards are revised before each decennial Census. When Census data become available, the standards are applied to define the actual MSA's. An MSA is a county or group of contiguous counties that contains at least one city with a population of 50,000 or more or includes a Census Bureau-defined urbanized area of at least 50,000 with a metropolitan population of at least 100,000. In addition to the county containing the main city or urbanized area, an MSA may contain other counties that are metropolitan in character and are economically and socially integrated with the central counties. In New England, cities and towns, rather than counties, are used to define MSA's. Rural residence using MSA's is defined as residing outside of an MSA. For further information on MSA's, see U.S. Department of Commerce, Bureau of the Census, *State and Metropolitan Area Data Book*.

Health insurance status

Health insurance information applies only to persons aged under 65 years. Those 65 years and older are considered to be covered by Medicare. Respondents are considered to have health insurance if they are covered by either private or public health plans. Private insurance includes fee-for-service plans, single service hospital plans, and coverage by health maintenance organizations (HMO's). Public insurance includes Medicaid or other public assistance, Aid for Families with Dependent Children (AFDC), Supplementary Security Income (SSI), Medicare, or military health plan coverage.

Disability

In 1980 the World Health Organization (WHO) published the first version of the International Classification of Impairments, Disabilities, and Handicaps (ICIDH) as a classification of the "consequence of disease." The new version, ICIDH-2, a classification of functioning and disability, is currently undergoing field testing worldwide with a 2001 target date for implementation.[15]

According to ICIDH-2, components of disability include:

- ☐ losses or abnormalities of bodily function and structure (impairments),
- ☐ limitations of activities (disabilities),
- ☐ restrictions in participation (formerly called handicaps), and environmental barriers

The major sources of national data on people with disabilities include:

- ☐ Decennial Census
- ☐ Survey of Income and Program Participation (SIPP)
- ☐ National Health Interview Survey (NHIS)
- ☐ National Health and Nutrition Examination Survey (NHANES)
- ☐ Medical Expenditure Panel Survey (MEPS)
- ☐ Current Population Survey (CPS)

For *Healthy People 2010* the major sources of disability data are the NHIS and NHANES for national data and the Behavioral Risk Factor Surveillance System (BRFSS) for State-level data. The NHIS has several variables that can be used to operationally define disability status, including limitation of activity, restriction of participation (bed days, work-loss days, school-loss days), and assessed health status.[16] The NHIS was redesigned in 1997 and many of the variables, especially limitation of activity, may be somewhat different than those collected by the survey before 1997. The BRFSS also collects information on health-related quality of life, limitation of activity, and self-assessed health status.

In *Healthy People 2010*, disability is primarily defined using any activity limitation or the use of special equipment. The following are the definitions used for NHIS, BRFSS, and NHANES measures.

For the 1997 NHIS, a person is currently classified as having a disability by responding "yes" to any of the following questions:

- ☐ Adults and children answering "yes" to the specific age-appropriate limitation questions in the Family Core questionnaire, or adults and children answering "yes" to the global (any limitation) question for those who did not previously specify a limitation.
- ☐ Adults 18 years and over answering "yes" to the use of special equipment from the Adult Core questionnaire.
- ☐ Children under 18 years answering "yes" to the use of special equipment from the Child Core questionnaire.

For NHIS data prior to 1997, the special equipment questions were not asked, so persons are categorized in the templates as "with activity limitation" rather than "with disabilities."

State data are available from the BRFSS telephone surveys. Disability is operationally defined in a number of different ways for program purposes and for analytic and research purposes, depending on the data collected by the data systems. For Healthy People 2010 purposes, using 1998 BRFSS data, people answering "yes" to any of the following questions define adults 18 years and older with disabilities:

- ☐ Are you limited in any way in any activities because of any impairment or health problem?
- ☐ If you use special equipment or help from others to get around, what type do you use?

Disability data from the NHANES are limited to the second phase of NHANES III (1991-94) and are calculated only for people 18 years and older. People are classified as having a disability if they respond "yes" to any of the following questions:

- ☐ Are you limited in the kind or amount of work you can do because of any impairment or health problem?
- ☐ Are you limited in the kind or amount of housework you can do because of any impairment or health problem?

- ☐ Are you limited in any way in any activities because of any impairment or health problem?
- ☐ Do you usually use any device to help you get around such as a cane, wheelchair, crutches or walker?

For *Healthy People 2010* a set of standardized questions has been proposed by the Centers for Disease Control and Prevention (CDC). Pilot testing of these questions continues and has not been completed as of the printing of this document. The questions may be modified based on the results of the tests. As these or similar questions are adopted by the data systems, the data produced from them will be incorporated into the Healthy People 2010 objectives that specifically identify people with disabilities. This presents the opportunity in the future to have a standard definition of people with disabilities that can be used across data systems and geographic levels. Objective 6-1 of *Healthy People 2010* will track the incorporation of a standard definition in data systems used to monitor the Healthy People 2010 objectives.

To a large extent, disability measures are related to the generation of many summary measures discussed in the goals section of *Understanding and Improving Health*. Summary measures of health generally combine information on mortality and health into a single measure. Many of these summary measures use variables that directly relate to disability status to generate the health component (often referred to as health-related quality of life) of the measure. Because of this, disability measures have importance beyond the assessment of the disability status of a population.

Age

Age is not included in the minimum template because to show inclusive age categories would add considerable complexity to the minimum set. Furthermore, age is often stated in the objective (for example, mammograms for females 40 years and older) and many objectives are relevant only for a subset of age groups. Age-specific select populations are added to objectives where needed and may not be inclusive of the total population. For example, data lines for the elderly or children have been added to some objectives without adding other groups, although showing inclusive age breakouts, if relevant, is preferred.

References

1. Department of Health and Human Services. Healthy People 2010 objectives: Draft for public comment. Office of Public Health and Science. U.S. Government Printing Office. Washington. 1998.

2. Office of Management and Budget. Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity. *Federal Register*. 62 FR 58781 - 58790. Oct 30, 1997.

3. Tabulation Working Group of the Interagency Committee for the Review of Standards for Data on Race and Ethnicity. Draft Provisional Guidance on the Implementation of the 1997 Standards for the Collection of Federal Data on Race and Ethnicity. Feb 17, 1999.

4. Office of Management and Budget. Directive No. 15. Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Statistical Policy Handbook. 1978.

5. Rosenberg, H.M.; Maurer, J.D.; Sorlie, P.D.; Johnson, N.J.; et al. Quality of death rates by race and Hispanic origin: A summary of current research, 1999. National Center for Health Statistics. *Vital and Health Statistics* 2(128), 1999.

6. National Center for Health Statistics. Vital Statistics of the United States, 1992, vol II, mortality, Part A, Technical appendix. Hyattsville, Maryland. 1996.

7. Sorlie PD, Rogot E, Johnson NJ. Validity of demographic characteristics on the death certificate. Epidemiology 3(2): 181–4. 1992.

8. Hogan H. The 1990 Post-enumeration survey: Operations and results. Journal of the American Statistical Association 88(423): 1047–60. 1993.

9. MacDorman MF, Atkinson JO. Infant mortality statistics from the 1996 period linked birth/infant death data set. Monthly vital statistics report; vol 46 no 12 supp. Hyattsville, Maryland: National Center for Health Statistics. 1998.

10. Kozak LJ. Underreporting of race in the National Hospital Discharge Survey. Advance data no 265. National Center for Health Statistics. Hyattsville, Maryland. 1995.

11. U.S. Department of Health and Human Services. Healthy people 2000: National health promotion and disease prevention objectives. Washington: Public Health Service. 1991.

12. National Center for Health Statistics. Health United States, 1998, with socioeconomic status and health chartbook. Hyattsville, Maryland. 1998.

13. U.S. Department of Education. The Condition of Education 1998: Indicator 22: Educational Attainment. Jessup, MD: National Center for Education Statistics. 1998.

14. Sorlie PD, Johnson NJ: Validity of education information on the death certificate. Epidemiology 7(4):437-439, 1996.

15. World Health organization. International Classification of Functioning and Disability (ICIDH-2): Beta-1 Draft for Field Trials. Geneva: The Organization, 1997, 11-21, 206-215, 221-225.

16. National Center for Health Statistics. Current Estimates from the National Health Interview Survey, 1995. Vital and Health Statistics. Series 10 no 199. Hyattsville, Maryland. 1998.

5
Age Adjustment

Because many objectives in *Healthy People 2010* have outcomes that vary by age, data for a number of objectives are age adjusted to control for differences due only to differences in age composition. Age adjustment, using the direct method, is the application of age-specific rates in a population of interest to a standardized age distribution in order to eliminate differences in observed rates that result from age differences in the population composition. This adjustment is usually done when comparing two or more populations (such as race/ethnic groups) at one point in time or one population at two or more points in time.

Age-adjusted rates are useful for comparison purposes only, not to measure absolute magnitude. (To compare absolute magnitude, numbers, or crude rates are used.) The numerical value of an age-adjusted rate is dependent on the standard population used and, therefore, has no intrinsic meaning. Because age-adjusted rates are adjusted to a predetermined standard, they should be viewed as constructs or indexes rather than as direct or actual measures of outcomes or risk. It is important to note that in order to compare age-adjusted rates they must be adjusted to the same standard population.[1]

For the Healthy People 2000 objectives, age adjustment was used for most of the mortality objectives and only for a very few selected other objectives. For *Healthy People 2010*, age adjustment is used again for most of the mortality objectives but also for many objectives that measure health outcomes and risk factors. Age-adjusted data are shown for objectives that target either the total population or a large age group(s).

Objectives or population subgroups that target relatively small age groups (generally less than 20-year age ranges) are not adjusted. For some population groups, the age-adjusted rates are considerably different than crude rates. This happens because the population distribution of the group is quite different from the distribution of the standard population, which, for most objectives, is based on the projected year 2000 population for the entire United States. For example, for the Hispanic population (especially Mexican Americans) the age adjusted rates for many outcomes and behaviors that are generally more frequent among the older population are considerably higher than the crude rates. This occurs because the Hispanic population has a much younger age distribution than the standard population.

Age-adjusted baseline data are noted in *Objectives for Improving Health* and in the operational definitions when they become available. Any data not specifically denoted as age adjusted, should be considered crude (unadjusted) data.

Mortality

There are about 40 Healthy People 2010 objectives that monitor mortality outcomes. Most of these objectives use data from the National Vital Statistics System (NVSS) of which 25 use death rates age adjusted by the direct method, to the 2000 standard population (see Appendix H). The other mortality objectives are measured using either:

- numbers of deaths
- age-specific death rates
- maternal/infant rates, which use births as the denominator, or
- crude death rates from other systems such as the Fatality Analysis Reporting System or the Census of Fatal Occupational Injuries

The details of measurement will be specified in the operational definition for each objective.

The age-adjusted death rate (AADR) is a weighted average of the age-specific death rates where the age-specific weights represent the relative age distribution of a standard population. The AADR is calculated by the direct method using the following formula:[2]

$$\text{AADR} = \sum_i w_{si} \cdot R_i$$

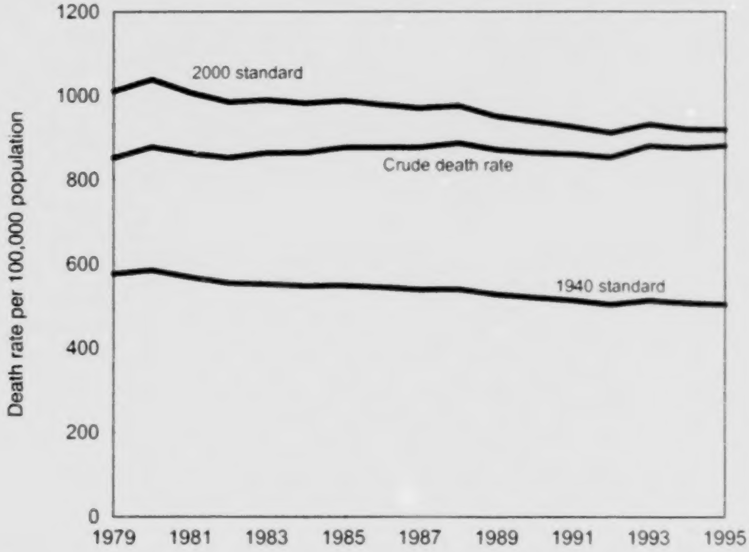
where R_i is the age-specific death rate for age interval i and w_{si} denotes the standard weight for age interval i such that

$$w_{si} = \frac{P_{si}}{\sum_i P_{si}}$$

where P_{si} denotes the population in age interval i in the standard population, $0 < w_{si} < 1$, and the w_{si} sum to 1.

Selection of the standard age distribution, or standard population, is to some extent arbitrary.[2,3] At least three different standards have been widely used over the years by Federal and State statistical agencies. Beginning with the analyses of data collected in 1999, all agencies of the Department of Health and Human Services (DHHS) will use a single standard based on a projection of the year 2000 U.S. population.[4,5] Use of a single and more contemporary population standard helps reduce perceptions that the previously used standards are outdated, as well as confusion and misunderstanding among data users and the media when multiple data standards were used by the Department of Health and Human Services.[4] Moreover, reflecting the current population structure, the new standard results in death rates that more closely approximate the average risk of death reflected in crude death rates.

Figure 7. Crude and age adjusted death rates based on the 1940 and year 2000 standard populations: United States, 1979-1995

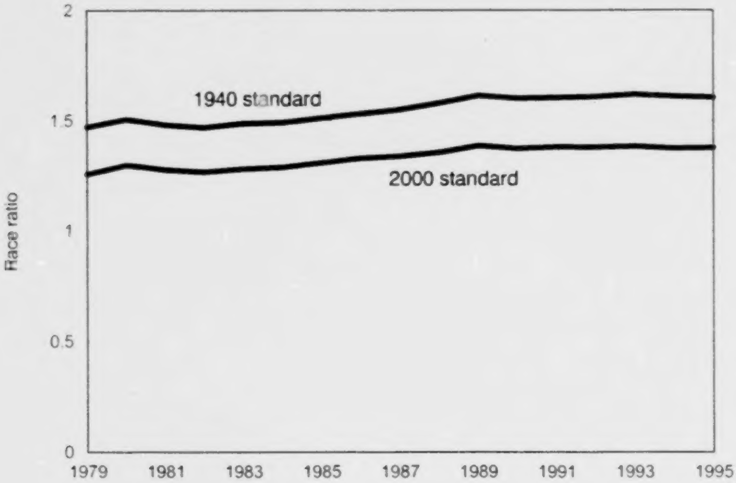


Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System

Age-adjusted death rates for 1997 and 1998 used for Healthy People 2010 baseline data are based on the year 2000 population standard. Therefore, they differ from rates shown in previous Healthy People 2000 reports, which show rates based on the 1940 standard population. *Healthy People 2010* is showing rates adjusted to the 2000 standard before implementation of the new standard by most other agencies and publications. Therefore, the Healthy People 2010 baseline data will differ from those published in *Health, United States*, or the *National Vital Statistics Report*. To assists with the transition from the 1940 to the 2000 standard, the baseline 2010 rates adjusted to 1940 for the applicable mortality objectives are included in Appendix H.

Changing to the year 2000 standard has implications for the interpretation of mortality trends and comparisons. Figure 7 shows the trend in mortality for the crude death rate and the age-adjusted death rates based on the 1940 and 2000 standard.[5] The age-adjusted death rate based on the year 2000 standard for recent years much more closely reflects the observed average risk of mortality (represented by the crude death rate) than the rate adjusted to 1940. The age-adjusted rate based on the 2000 standard population is larger because the 2000 population, which has an older age structure than the 1940 population, gives more weight than the 1940 standard to death rates at the older ages where mortality is higher. The trend lines for the age-adjusted total mortality rates are roughly parallel, showing decreases in age-adjusted rates that are similar for the period 1979 through 1995. However, trends for some causes of death may differ. For Healthy People this means that the rates computed for *Healthy People 2000* cannot be used in trend comparisons with rates computed for *Healthy People 2010.*

Figure 8. Mortality race ratio based on the 1940 and year 2000 standard populations: United States, 1979-1995



Note: Race ratio = ratio of age-adjusted death rates for the African American population to that for the white population

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System

Changing standards will affect comparisons between race and Hispanic groups. In particular, ratios of African American to white age-adjusted death rates are reduced from those based on the 1940 standard population, reducing the disparity between these two groups[5] (see figure 8). This is due to the older age structure among the white population compared to the African-American population and greater weight given to death rates at the older ages. Comparisons between white and other minority groups may also be affected.

Comparisons should not be made between age-adjusted death rates based on different standards since the numerical value of the age-adjusted rate depends on the standard used; thus, age-adjusted death rates calculated before the implementation of the year 2000 standard will not be comparable with rates based on the year 2000 standard. Comparability requires recalculating the time series predating the new standard. For more detailed information regarding age adjustment and the implications of implementing the year 2000 standard, refer to the National Center for Health Statistics (NCHS) publication "Age standardization of death rates: implementation of the year 2000 standard,"[5] which can be obtained at the following Internet address:

http://www.cdc.gov/nchs/products/pubs/pubd/nvsr/47-pre/47-pre.htm

The year 2000 standard age distribution for mortality data along with corresponding values for w_{si} are shown in Table 3.

Table 3. Year 2000 standard million age distribution

Age	Population *(in thousands)*	Standard Million	*Proportion distributions* (w_{si})
All ages	274,634	1,000,000	1.000000
Under 1 year	3,795	13,818	0.013818
1-4 years	15,192	55,317	0.055317
5-14 years	39,977	145,565	0.145565
15-24 years	38,077	138,646	0.138646
25-34 years	37,233	135,573	0.135573
35-44 years	44,659	162,613	0.162613
45-54 years	37,030	134,834	0.134834
55-64 years	23,961	87,247	0.087247
65-74 years	18,136	66,037	0.066037
75-84 years	12,315	44,842	0.044842
85 years and older	4,259	15,508	0.015508

Source: U.S. Bureau of the Census, Population Estimates Program.

Health surveys

Population-based data

A number of other Healthy People 2010 objectives use data from national health surveys that are also age adjusted. These are specified in *Objectives for Improving Health* and in the operational definition for each objective. These include objectives tracked by the National Health Interview Survey (NHIS), the National Hospital Discharge Survey (NHDS), the National Ambulatory Medical Care Survey (NAMCS), the National Hospital Ambulatory Medical Care Survey (NHAMCS), and the National Health and Nutrition Examination Survey

(NHANES). Data for these objectives are also age adjusted to the 2000 standard population. However, the age groups used to adjust the data may be somewhat different from those used to adjust mortality data. Difference resulting from the specific age groups used should be relatively small. In some cases, the applicable age range for the objective may not be the total population. For example, an objective may refer to persons aged 18 years and older, females aged 40 years and older, or persons aged 45-74 years, etc. In these cases, the weights are recomputed for applicable age groups so that they total to 1 (or 1,000,000).

A reference list based on the projected 2000 population from which weights can be computed to age adjust data for virtually all Healthy People 2010 objectives is shown below:

Table 4. Year 2000 population projections by age ***(in thousands)***

Age	Population	Age	Population
Total	274,634		
Under 1 year	3,795		
1 year	3,759	35-39 years	22,180
2-4 years	11,433	40-44 years	22,479
5 years	3,896	45-49 years	19,806
6-8 years	11,800	50-54 years	17,224
9 years	4,224	55-59 years	13,307
10-11 years	8,258	60-64 years	10,654
12-14 years	11,799	65-69 years	9,410
15-17 years	11,819	70-74 years	8,726
18-19 years	8,001	75-79 years	7,415
20-24 years	8,257	80-84 years	4,900
25-29 years	17,722	85 years and older	4,259
30-34 years	19,511		

Source: U.S. Bureau of the Census, Population Estimates Program.

More information on the age groups used to adjust and the weights used for specific data systems can be found in *Health, United States*.[7]

Nursing home data

Several objectives have data for the nursing home population. Because this population has a very different age distribution from that for the total population, the year 2000 standard population is not used for age adjustment. For these objectives, the data are age adjusted to the estimated year 2000 nursing home population, using the age groups and populations shown in Table 5. The age-specific number of nursing home residents in 2000 is estimated by multiplying the 2000 projected population used for standardizing mortality objectives by the proportion of the population residing in nursing homes estimated from the 1997 National Nursing Home Survey and the July 1, 1997 census population estimates.

Table 5. Year 2000 nursing home population projections by age

Age	Population
18 years and older	1,679,778
18-24 years	3,742
25-34 years	7,310
35-44 years	22,548
45-64 years	113,012
65-74 years	192,459
75 years and older	1,340,707

Source: U.S. Bureau of the Census, Population Estimates Program; Centers for Disease Control and Prevention, National Center for Health Statistics, National Nursing Home Survey.

References

1. Shryock HS, Siegel JS, et al. *The Methods and Materials of Demography*. San Diego: Academic Press. 1976.

2. Feinleib M, Zarate AO, eds. Reconsidering age adjustment procedures: Workshop proceedings. National Center for Health Statistics. Vital Health Stat 4(29). 1992.

3. Curtin LR, Maurer J, Rosenberg HM. On the selection of alternative standards for the age-adjusted death rate. Proceedings of the social statistics sections, American Statistical Association, pp. 218–23. 1980.

4. Anderson RN, Rosenberg HM. Report of the second workshop on age adjustment. National Center for Health Statistics. Vital Health Stat 4(30). 1998.

5. Anderson RN, Rosenberg HM. Age standardization of death rates: Implementation of the year 2000 standard. National vital statistics reports; vol 47 no 3. Hyattsville, Maryland: National Center for Health Statistics. 1998.

6. Curtin, LR, Klein RJ. Direct standardization (age-adjusted death rates). Statistical Notes no 6 revised. National Center for Health Statistics. Hyattsville, MD. Mar 1995.

7. National Center for Health Statistics. Health, United States, 2000. To be published in July 2000.

6
Mortality and Morbidity Classification

Mortality data

Baseline data for mortality objectives for specific causes of death in this report are classified and coded according to the World Health Organization's (WHO) Ninth Revision of the International Classification of Diseases (ICD-9)[1] that was implemented in the United States effective with deaths occurring in 1979. The specific ICD-9 codes used are included in the operational definition for each mortality objective. Beginning with deaths occurring in January 1999, the Tenth Revision of the ICD will be used (ICD-10).[2]

Since the beginning of the century, the ICD for mortality has been modified about once every 10 years, except for the 20-year interval between the last two revisions, ICD-9 and ICD-10. The purpose of the revisions is to stay abreast with medical advances in terms of disease nomenclature and etiology.

The ICD is a classification system for causes of death, which includes (1) coding rules for causes of death, these rules allow a medical coder to identify the underlying cause of death on the death certificate that is considered most informative from a public health point of view; (2) definitions for concepts like "underlying cause of death;" (3) tabulation lists that indicate the cause-of-death groupings that countries should use to present mortality data that can be compared with other countries; and (4) the prescribed format of the medical certification section of the death certificate. Use of the ICD for classification and coding of mortality is required under an agreement between the United States and WHO.

Data for most Healthy People 2010 mortality objectives are based on the underlying cause of death. The underlying cause of death is defined by WHO as the disease or injury that initiated the sequence of events leading directly to death or as the circumstances of the violence or accident that produced the fatal injury.[1] It is selected from the conditions entered by the physician in the cause of death section on the death certificate. When more than one cause is entered by the physician, the underlying cause is determined by the sequence of conditions on the certificate, provisions of the ICD, and associated selection rules and modifications.[3] Generally, more information is reported on the death certificate than is directly reflected in the underlying cause of death. This is captured in the multiple cause-of-death statistics. Several objectives use all mentions of a cause (or "multiple" cause) on the death certificate. Details on the ICD-9 codes used for the baseline for the Healthy People 2010 objective and whether the data used are underlying or multiple cause will be found in the operational definition for each mortality objective and also summarized in Appendix I.

ICD-10 differs from ICD-9 in a number of respects: (1) ICD-10 is far more detailed than ICD-9, about 8,000 categories compared with 4,000 categories, the expansion was mainly to provide more clinical detail for morbidity (illness) applications; (2) ICD-10 uses 4-digit alpha-numeric codes compared with 4-digit numeric codes in ICD-9; (3) three additional chapters have been added, some chapters rearranged, cause of death titles have been changed, and conditions have been regrouped; and (4) some coding rules have been changed.

The ICD-10 cause-of-death categories are reflected in ICD-10 tabulation lists created by the National Center for Health Statistics (NCHS) in collaboration with other Federal agencies and the States. A total of eight tabulation lists were developed for ICD-10, the most detailed of which includes each of the 4-digit categories that are valid for underlying cause of death. Replacing the widely used ICD-9 list of 72 selected causes of death plus HIV and Alzheimer's is the ICD-10 tabulation list of 113 Selected Causes of Death. This list, which will be used to identify and rank the leading causes of death, will also be used, wherever possible, to track the Healthy People 2010 mortality objectives.

The lists are published in the NCHS Instruction Manual, Part 9.[4] They can be accessed through the NCHS mortality website at the following address:

http://www.cdc.gov/nchs/about/major/dvs/im.htm

Introduction of a new revision of the ICD creates discontinuities-some serious-in time series trends for causes of death, because the reclassification of diseases and changes in the coding rules. Therefore, the causes of death used for the 1997 and 1998 baselines in the initial Healthy People 2010 report will not be strictly comparable with the tracking data from 1999 and subsequent years.

When graphically displaying mortality data across revisions of the ICD, it is helpful if trend lines be broken at the point in time that the new ICD revision was introduced to emphasize the discontinuities resulting from the change in revision. The extent of the discontinuity is measured using a "comparability ratio," which results from double-coding a large sample of the national mortality file, once by the old revision (ICD-9), and again by the new revision (ICD-10), and expressing the results of the comparison as a ratio of deaths for a cause of death by the later revision divided by the number of that cause of death coded and classified by the earlier revision.[5] Comparability ratios for causes of death between ICD-9 and ICD-10 will be published by NCHS in the year 2000. In subsequent Healthy People 2010 reports, information will be provided on the comparability of the ICD-9 baseline data and the ICD-10 tracking data for Healthy People 2010 objectives that are affected.

The NCHS Website for ICD-10 for mortality is as follows:

http://www.cdc.gov/nchs/about/major/dvs/icd10des.htm

Morbidity data

Baseline data for morbidity objectives from sources such as the National Hospital Discharge Survey, National Ambulatory Medical Care Survey, and the National Hospital Ambulatory Care Survey are coded to International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM).[6] The specific ICD-9-CM codes used will be included in the operational definition for each morbidity objective.

ICD-9-CM is a clinical modification of the WHO's International Classification of Diseases, 9th Revision (ICD-9). The term "clinical" is used to emphasize the modification's intent to serve as a useful tool in the area of classification of morbidity data for indexing of hospital medical records, medical care review, and ambulatory and other medical care programs, as well as for basic health statistics. ICD-9-CM provides greater specificity at the fifth digit level of detail which goes beyond the three and four digit level of ICD-9.

ICD-9-CM is used to code and classify morbidity data from inpatient and outpatient records, physicians' offices, long term care facilities and most NCHS surveys. ICD-9-CM is compatible with its parent classification (ICD-9) thus meeting the need for comparability of morbidity and mortality statistics.

Additional codes and code changes were made to the ICD-9-CM beginning in 1986. A conversion table for diagnosis and procedure code changes between 1986–98 is available to assist users in data retrieval. The table shows the date the new code became effective and its previously assigned code equivalent. The latest additions to the classification appear in bold print. The conversion table may be found on the NCHS website at the following address:

http://www.cdc.gov/nchs/datawh/ftpserv/ftpicd9/ftpicd9.htm#conv

Code assignment using ICD-9-CM is based on official national coding guidelines. The guidelines for selecting the "first-listed" or principal diagnosis for morbidity records differ from those used in coding death records to select the underlying cause of death. Under morbidity coding rules, the first listed or principal diagnosis is that condition established after study to be chiefly responsible for occasioning the admission to the hospital or the encounter with the health care provider for care. In some instances the principal diagnosis may be a manifestation of the disease rather than the underlying cause. For example, if a patient with a primary malignant neoplasm with metastasis is admitted to receive treatment directed toward a secondary site, the secondary site would be designated on the hospital discharge form as the principal diagnosis.

For *Healthy People 2010*, "first-listed" diagnosis is primarily used to track the morbidity objectives. However, in some cases "all-listed" diagnoses are used (as many as 7 to 10 diagnoses appear in some records). Details on the ICD-9-CM diagnoses will be are noted in the operational definition for each applicable objective and are summarized in Appendix J.

The official coding guidelines are available on the NCHS morbidity website at the following address:

http://www.cdc.gov/nchs/datawh/ftpserv/ftpicd9/ftpicd9.htm#guide

A clinical modification of ICD-10 (ICD-10-CM) has been developed as a replacement for ICD-9-CM, however, as of this writing, an implementation date had not been designated. Once implemented, revised coding guidelines, training materials and crosswalks between ICD-9-CM and ICD-10-CM will be made available on the NCHS website.

References

1. World Health Organization. Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, based on the recommendations of the Ninth Revision Conference. Geneva: World Health Organization. 1977.

2. World Health Organization. International Statistical Classification of Diseases and Related Health Problems, Tenth Revision. Geneva: World Health Organization. 1992.

3. Hoyert DL, Kochanec KD, Murphy SL. Deaths: final data for 1997. National vital statistics reports; vol 47 no 19. Hyattsville, Maryland. National Center for Health Statistics. 1999.

4. National Center for Health Statistics, Vital statistics, ICD-10 cause-of-death lists for tabulating mortality statistics, effective 1999. NCHS instruction manual: part 9. Hyattsville, Maryland: Public Health Service. 1997.

5. National Center for Health Statistics. Vital Statistics of the United States, vol. II, mortality, part A, technical appendix. Washington: Public Health Service (annual).

6. U.S. Department of Health and Human Services. International Classification of Diseases, Ninth Revision, Clinical Modifications, sixth edition. Washington D.C.: U.S. Department of Health and Human Services, Public Health Service, Health Care Financing Administration, DHHS Publication No. (PHS), 96-1260. 1997.

7
National Data

Data used to track the Healthy People 2010 objectives are for the 50 States and the District of Columbia, where available. Unless otherwise specified, all objectives exclude data for U.S. territories. The data used to track the Healthy People 2010 objectives are derived from either a national census of events (e.g. National Vital Statistics System, National Notifiable Disease Surveillance System, Fatality Analysis Reporting System) or from nationally representative sample surveys (e.g., National Health Interview Survey, National Household Survey on Drug Abuse, School Health Policies and Programs Study).

For some objectives, however, complete national data are not available and data for selected States and/or areas are used to monitor the objectives. In these cases, the coverage area is described with the data for the objective and in the operational definitions. Examples of these data systems include the Metropolitan Atlanta Developmental Disabilities Surveillance Program (MADDSP), Adult Spectrum of Disease Project (ASD), and Toxic Exposure Surveillance System (TESS). Data for these objectives may not be representative of the United States as a whole. If during the decade national data become available, they will be used to track the objectives.

For some national data systems, such as the Behavioral Risk Factor Surveillance System and the National Vital Statistics System, data are not available for some variables for all States. Some examples are shown in Table 6 below, with the number of States reporting in the most recent year. The number of reporting States can vary from year to year. This information is also shown in the operational definitions.

Table 6. Variables in major data systems for which data are not available from all States

Data System	Variable	Number of States With Data Available
National Vital Statistics System (Mortality)	Hispanic origin	49 States + District of Columbia (1997)
National Vital Statistics System (Mortality)	Education	46 States + District of Columbia (1997)
National Vital Statistics System (Natality)	Maternal smoking	46 States + District of Columbia (1997)
Behavioral Risk Factor Surveillance System	Diabetes variables	43 States (1997)
Behavioral Risk Factor Surveillance System	Pain days	16 States (1998)

8
State and Local Data

Healthy People has provided a framework for national, State, and local health agencies and non-governmental organizations to assess health status, health behaviors, and services and to plan and evaluate health promotion programs.[1, 2] The national Healthy People initiatives have served as a "menu" for identifying State and local priorities and selecting objectives that are most relevant to specific States, communities, and specific settings (schools, worksites, etc.), and health care delivery systems.[3] By using the national Healthy People initiative as a common point of departure, agencies and organizations have tailored programs targeted toward their customers, yet retained a common basis for evaluating performance in relation to both the nation, other States, or populations.[4]

This focus on performance has prompted State and local health agencies to shift from their emphasis of primarily providing services to one that conducts needs assessment and quality assurance.[5] This shift has required increased collection and analysis of data. Health care delivery organizations have also experienced this shift and have increased efforts to collect standardized data on patients, services, and outcomes.[6] The increased emphasis on data collection and analysis for purposes of assessment and evaluation has increased the need to address the associated issues of data availability, validity/reliability, comparability, and utilization. These issues also affect the relevance of the national Healthy People objectives at the State and local level. The large number and diversity of State and local health agency structures and resources amplify the impact of these data issues when trying to compare Healthy People plans, objectives, and progress among States or between a State and the nation. States also vary considerably in their capacity to monitor the objectives they identify as most relevant to their constituents.[7] Some key areas where these issues need to be examined at State and local levels are discussed below:

Objective Wording/Operational Definition

The Healthy People "menu" provides a useful way for States and localities to focus on serious health issues, but many agencies and organizations have tailored the objectives to better focus on specific concerns of their users. These modifications may more effectively address the health concerns of the State or local population, but they also reduce comparability when evaluating objective progress relative to the nation, other States, or localities.[8]

Population Data/Race-ethnicity Reporting

Many Healthy People objectives are population based and are expressed in terms of mortality or morbidity rates (e.g., lung cancer deaths per 100,000), where the denominator is a population estimate. National, State, and local health agencies primarily rely on population estimates produced by the U.S. Bureau of the Census. The Bureau produces estimates for the nation, States, counties, and large municipalities during the decennial census and has provided annual post-censal estimates since 1990 (see section 3: Population Estimates). These estimates are provided by gender, age and race/ethnicity (see section 4: Population Template). However, the sizes of some racial groups (American Indian or Alaska Native and Asian or Pacific Islander) are relatively small, even at the national level, and are distributed unevenly across State and local areas. This precludes many jurisdictions from producing reliable rates for objectives that focus on these populations.

"Rare" Events/Confidentiality

Some Healthy People objectives (for example, suicide or HIV deaths) address important, sensitive health issues which are, fortunately, relatively rare events. Reporting small numbers of suicides or HIV deaths in a county or municipality with a small population may produce unreliable, nonrepresentative rates. Reporting these rates by certain characteristics may also jeopardize confidentiality, including geocoding and displaying maps of the distribution of sensitive or rare events. It may be necessary to average these events over several years or present the data as a sum for multiple years to address both of these problems.

Age adjustment

In general, States and localities age adjust mortality data to the same standard population used for the national data (see section 5: Age Adjustment).

Data Sources

The availability and comparability of data for national, State, and local monitoring of Healthy People objectives vary considerably. Some data, especially vital statistics, are readily available at national, State, county, and some municipal levels. The standardization of vital statistics data contributes to its comparability across jurisdictions. Because they are readily accessible and generally comparable, mortality and natality data were key parts of the 18 Health Status Indicators (HSI) selected for widespread State and local use in *Healthy People 2000*.[9] However, vital statistics data provide only a limited perspective on health status, risk behaviors, and access to health care. Morbidity and risk factor data are required to monitor a very large proportion of the current and proposed Healthy People objectives. Data for these objectives come from a wide range of household surveys, environmental hazard data, and other sources.

Many of the national Healthy People objectives are monitored using data from the National Health Interview Survey (NHIS). Some of these objectives are monitored at State and some local levels using data from the Behavioral Risk Factor Surveillance Survey (BRFSS) and the NHIS. Details of these surveys (e.g., design, sampling) are described in the Major Data Sources section of this document. In general, however, it should be noted that both differences in the methods of data collection (household interview versus telephone interview) and wording of questions used to monitor the same objectives can affect the comparability of the information collected. Additionally, some objectives monitored with identical questions in both the NHIS and the BRFSS (e.g., firearm storage) are only included periodically in a specific rotating module of the BRFSS or supplements to the NHIS. Not all States use these modules or the year of the "rotation" may not coincide with national data from the NHIS. This limits comparability between national and State data.

Other national Healthy People objectives are monitored using composite data sources (e.g., General Estimates System, National Water Quality Trends Report). The national data from these systems are aggregated from data collected at State or local levels. Unlike the vital statistics data (which include all births and deaths), several of these systems are samples of events that use somewhat different data collection and analysis methods between States or between communities.[10] This affects the quality and comparability of national, State, and local data.

For other Healthy People objectives, State and local jurisdictions were unable to monitor progress. This prompted the development of Priority Data Needs under Healthy People 2000,[11] which identified sources of State and local data that could be used to track important health issues, such as adult immunization and access to primary health care. During the development of the Healthy People 2010 objectives, participants proposed that a set of Leading Health Indicators[4] be selected to further improve national, State, and local agencies' abilities to measure and evaluate health status and programmatic activity (se *Understanding and Improving Health*). This set of indicators should provide a profile of health status for national, State, and local populations.

References

1. Public Health Foundation. Measuring Health Objectives and Indicators: 1997 State and Local Capacity Survey. Washington, DC. Mar 1998.

2. American Public Health Association, Healthy Communities: Guidelines for Community Attainment of the Year 2000 National Health Objectives. Washington, DC. 1991.

3. Public Health Service, Department of Health and Human Services. Promoting health/preventing disease: Objectives for the nation, Washington, DC. Fall 1980.; Public Health Service, Department of Health and Human Services, Healthy People 2000: National health promotion and disease prevention objectives. Washington, DC. Sept 1990.

4. Twenty-two percent of the U.S. Department of Health and Human Services objectives included in the agency's strategic plan (developed in accordance with the Government Performance and Results Act of 1993) were adopted from *Healthy People 2000* (see Office of Disease Prevention and Health Promotion, Department of Health and Human Services. Leading Indicators for Healthy People 2010: A report from the HHS working group on sentinel objectives. Washington, DC. Mar 1998).

5. Institute of Medicine. The Future of Public Health. Washington, DC: Academy Press. 1988; National Center for Health Statistics, Centers for Disease Control and Prevention. The CDC Assessment Initiative: A summary of state activities, Statistics and Surveillance Note No. 7. Hyattsville, Md. Oct 1995.

6. Many health care organizations have adopted the use of the Health Employer Data Information System (HEDIS) as a mechanism to standardize the collection of data and to evaluate outcomes. (See National Committee for Quality Assurance website: www.ncqa.org)

7. The Public Health Foundation reports that, in 1997, States reported an average ability to measure 39 percent of the *Healthy People 2000* objectives. (See Public Health Foundation. 1997 State and Local Capacity Survey, Washington, DC. Mar 1998.) To focus on the need to develop capacity for tracking at the State and local level, *Healthy People 2010* includes a separate focus area aimed at improving infrastructure and surveillance capability. (See Office of Public Health and Science. *Healthy People 2010* Objectives: Draft for Public Comment. Department of Health and Human Services. Washington, DC. Sept 1998.)

8. For example, there is a national objective calling for increased testing and mitigation of homes for threats from radon. Some States have adopted this objective verbatim, whereas others have also included schools or daycare centers within the same objective related to home testing. Additionally, the operational definitions used for the same or similar national and State/local objectives may vary considerably. The national radon objective is monitored using self-report data from a household survey, whereas some States use data based on actual installation of radon monitors and picocurie information collected.

9. Freedman, MA. Health status indicators for the Year 2000. Statistical Note No. 1. Hyattsville, MD. Fall 1991.

10. For example, the National Water Quality data are compiled from State data on "assessed" rivers, lakes, and estuaries. States vary in the proportions and the specific bodies of waters they assess across time. Hence, both State and national estimates may be subject to considerable variation.

11. Kim I, Keppel K. Priority data needs: Sources of national, State, and local-level data and data collection systems. Statistical Note No. 15. Hyattsville, MD. Dec 1997.

9
Variability of Estimates

For many health outcomes, assessing all individuals in a population may be impossible, impractical, expensive, or inaccurate. Therefore, it is usually advantageous to study a sample of the original population.[1] Much of the data used to monitor the Healthy People 2010 objectives are derived from sample surveys (e.g., National Health Interview Survey, National Survey of Family Growth, National Household Survey on Drug Abuse, National Health and Nutrition Examination Survey, Youth Risk Behavior Survey, etc.) that make estimates for a population from a representative sample of respondents. These estimates are subject to sampling variation or sampling error. The standard error is a measure of sampling error and represents the variations that can occur by chance since only a sample of the population is surveyed rather than the entire population. The chances are about 68 in 100 that an estimate from the sample would differ from a complete census by less than the standard error. The chances are about 95 in 100 that the difference would be less than twice the standard error. This is often referred to as the 95 percent confidence interval, where the estimate is expressed as a range of the observed rates, approximately +/- 1.96 standard errors.

Some of the data (e.g., vital statistics, infectious disease incidence) used to track the Healthy People 2010 objectives are based on complete counts. As such, they are not subject to sampling error, but are subject to errors in the registration process. However, when the estimates are used for analytical purposes, such as the comparison of rates over a period of time or for different groups or areas, the number of events that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances. This is generally known as random variation. When the number of events is large, random variation is usually small. However, when the number of events is small (fewer than 100) and the probability of such an event is small, random variation can be substantial and considerable caution must be used in interpreting the change described by the estimates. In these cases, it is desirable to compute the standard error of the estimates and use that computation in the comparison of interest. More information on random variation and small numbers can be found in the *Vital Statistics of the United States*.[2]

To properly interpret differences between rates for different groups or changes over time derived from sample surveys, it is important to consider the sampling variation associated with each rate. Healthy People 2010 specifies the use of a population template that includes detailed racial, ethnic, and socioeconomic breakouts for all population-based objectives (see section 4: Population Template). Therefore, some objectives show data for relatively small populations groups. These data may be associated with large standard errors and, therefore, apparent differences between population groups or between a population group in the template and the total population may be within expected sampling or random error. Standard errors should be considered when evaluating progress or comparing population groups for objectives using survey data. For ease of presentation, the standard errors associated with the estimates for the Healthy People 2010 objectives do not appear in either *Objectives for Improving Health* or *Tracking Healthy People 2010*. However, where available, they are included in the Healthy People 2010 database (see section 10: Healthy People 2010 Database). More information on the sample design and variance estimation for the major data systems used to monitor the Healthy People 2010 objectives can be found in other publications.[3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

References

1. Kuzma JW. Basic statistics for the health sciences. Loma Linda University. Mayfield Publishing Co. 1984.

2. National Center for Health Statistics. Vital Statistics of the United States. Vol I, natality and vol II, mortality. Washington: Public Health Service. Published annually.

3. Maurer KR. Plan and operation of the Hispanic Health and Nutrition Examination Survey, 1982–84. National Center for Health Statistics. Vital Health Stat 1(19). 1985.

4. National Center for Health Statistics. Plan and operation of the third National Health and Nutrition Examination Survey, 1988-94. Vital Health Stat 1(32). 1994.

5. Ezzati TM, et al. Sample design: Third National Health and Nutrition Examination Survey. National Center for Health Statistics. Vital Health Stat 2(113). 1992.

6. Waksberg J, Sperry S, Judkins D, Smith V. National Survey of Family Growth, Cycle IV, evaluation of linked design. National Center for Health Statistics. Vital Health Stat 2(117). 1993.

7. Judkins DR, Mosher WD, Botman S. National Survey of Family Growth: Design, estimation, and inference. National Center for Health Statistics. Vital Health Stat 2(109). 1991.

8. Massey JT, Moore TF, Parsons VL, Tadros W. Design and estimation for the National Health Interview Survey, 1985-94. National Center for Health Statistics. Vital Health Stat 2(110). 1989.

9. Kann L, Lolbe LJ, Collins JL (eds.). Measuring the health behavior of adolescents: The Youth Risk Behavior Surveillance System and recent reports on high-risk adolescents. Public Health Reports 108 (Suppl 1):1-67. 1993.

10. Errecart MT, Ross JG, Robb W, et al. The School Health Policies and Programs Study (SHPPS): Methodology. J of School Health 8(65):295–301. 1995.

11. National Center for Health Statistics. Current estimates from the National Health Interview Survey. National Center for Health Statistics. Vital Health Stat. Series 10. Published annually.

12. Haupt BJ, Kozak LJ. Estimates from two survey designs: National Hospital Discharge Survey. National Center for Health Statistics. Vital Health Stat 13(111). 1992.

13. Centers for Disease Control and Prevention. Summary of notifiable diseases, United States. Morbidity and Mortality Weekly Report. Published annually.

10

Healthy People 2010 Database

The Healthy People 2010 database, called "DATA2010," can be accessed through the CDC/WONDER system found on the Internet at http://wonder.cdc.gov. Through this website the user can create tables that contain the baseline and tracking data for each of the Healthy People 2010 objectives and the Leading Health Indicators.

This website also allows users to obtain other Healthy People 2010 information, such as full text of the objectives, lead agency contacts for each focus area, and information on Healthy People 2010 progress reviews. This information is presented in specially formatted documents (HTML), which can be viewed by standard web browsers.

Database Description

DATA2010 is a SAS database that contains one record (or observation) for each objective and subpart found in the 28 focus areas. The database will also contain records for the measures used to track the goals and the Leading Health Indicators.

Each record in the database contains the following information:

- ☐ Objective number
- ☐ Objective text (abbreviated)
- ☐ Baseline year
- ☐ Baseline year data
- ☐ Tracking data for years subsequent to the baseline
- ☐ Target
- ☐ Geographic coverage for national and State level (currently only national coverage is provided)
- ☐ Select population breakouts
- ☐ Related objectives in other focus areas

- ☐ Population categories (such as students, infants, children, adolescents, and the elderly)
- ☐ Comments (definitions, clarifications, and explanations)
- ☐ Data source(s)

Future plans

In the future, DATA2010 will contain additional options for selection of additional population groups, and include options for map generation. State data are expected to be added to the database, and users will be able to select national and/or State data. The graph record selection will be enhanced from selection of one record per graph to multiple records per graph.

Major Data Sources for Healthy People 2010

The 467 Healthy People 2010 objectives are being tracked by 190 data sources. Table 7 (see following page) lists the major data sources by the number of objectives they track. About three fifths (283) of the objectives are tracked with data from these sources. A major data source is defined as a data system responsible for tracking five or more Healthy People 2010 objectives. There are 22 data systems that meet these criteria. A brief discussion of each (by alphabetical order) is provided in this section.

Table 7. Major Healthy People 2010 data sources by number of objectives tracked

Data System	Number of Objectives Tracked*
National Health Interview Survey (NHIS)	73
National Health and Nutrition Examination Survey (NHANES)	43
National Vital Statistics System—Mortality (NVSS-M)	39
School Health Policies and Programs Study (SHPPS)	16
National Survey of Family Growth (NSFG)	16
National Vital Statistics System—Natality (NVSS-N)	15
National Hospital Discharge Survey (NHDS)	13
National Household Survey on Drug Abuse (NHSDA)	12
National Profile of Local Health Departments (NPLHD)	12
Behavioral Risk Factor Surveillance System (BRFSS)	11
HIV/AIDS Case Surveillance System	10
Youth Risk Behavior Surveillance System (YRBSS)	10
National Ambulatory Medical Care Survey (NAMCS)	9
National Hospital Ambulatory Medical Care Survey (NHAMCS)	9
Continuing Survey of Food Intake by Individuals (CSFII)	6
National Crime Victimization Survey (NCVS)	6
National Notifiable Disease Surveillance System (NNDSS)	6
United States Renal Data System (USRDS)	5
Medical Expenditure Panel Survey (MEPS)	5
Monitoring the Future Study (MTF)	5
1999 National Worksite Health Promotion Survey (NWHPS)	5
STD Case Surveillance Reporting System (STD-CRSS)	5

*Preliminary count.

Behavioral Risk Factor Surveillance System (BRFSS)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)
MODE OF ADMINISTRATION	Telephone interview.
SURVEY SAMPLE DESIGN	Data collection is decentralized by State. Sample design uses State-level random digit-dialed probability samples of the adult (18 years of age and over) population. Most States currently use stratified random sampling methods. Increasing State participation over time, with 15 States in 1984 and all 50 States and the District of Columbia since 1996. In 1997, State-specific sample sizes ranged from 1,511 to 4,911.
RESPONSE RATES	State response rates vary from year to year. In 1997, upper-bound response rates ranged from 46 to 93 percent (median response rate: 77 percent).
PRIMARY SURVEY CONTENT	The survey consists of a core of questions asked in all States, optional questions on selected topics identified by CDC and administered at the State's discretion, a rotating core of questions asked every other year in all States, and State questions developed to address State-specific needs. Questions cover behavioral risk factors (e.g., alcohol and tobacco use), preventive health measures, health status, limitation of activity, and health care access and utilization.
POPULATION TARGETED	Civilian noninstitutionalized population 18 years of age and older who reside in households with telephones.
DEMOGRAPHIC DATA	Gender, age, educational attainment, race/ethnicity, household income, employment status, and marital status.
YEARS COLLECTED	Annually since 1984.
SCHEDULE	Annual.
GEOGRAPHIC ESTIMATES	National; State; smaller area estimates possible in some States.

NOTES

The BRFSS is a partnership between State Health Departments and CDC; CDC provides less than one-half of the financial resources for States to use for data collection efforts. States have substantial input on questions to be asked by all States through the BRFSS. Many Healthy People objectives are tracked with questions that are asked every other year or are optional. Persons who do not have telephones or have telephones but are either in institutional settings or cannot be understood over the telephone are excluded.

CONTACT INFORMATION

Data system homepage:
http://www.cdc.gov/nccdphp/brfss
Data system phone: 770-488-5292
Agency homepage:
http://www.cdc.gov/nccdphp
Agency phone: 770-488-5401

Continuing Survey of Food Intake by Individuals (CSFII), 1994-96

SPONSOR	U.S. Department of Agriculture, Agricultural Research Service
MODE OF ADMINISTRATION	Two nonconsecutive days of food intake data collected 3-10 days apart during in-person interviews using the 24-hour dietary recall method. About 2 weeks later, one adult from each household was asked to answer a series of questions about knowledge and attitudes toward dietary guidance, health, and use of food labels.
SURVEY SAMPLE DESIGN	Nationally representative stratified multistage area probability sample of U.S. noninstitutionalized civilian population, all ages. Subsampling of individuals in households. Oversampling of low-income households with incomes at or below 130 percent of the poverty threshold. For 1994-96, sample size for 1-day dietary data was 16,103; for 2-day dietary data, it was 15,303.
RESPONSE RATES	One-day response rate: 80 percent; and two-day response rate: 76 percent.
PRIMARY SURVEY CONTENT	Kinds and amounts of foods consumed on each of two nonconsecutive days, sources of foods, time, name of each eating occasion. Also collected are food expenditures, shopping practices, pregnancy, lactation, nursing status, and height and weight.
POPULATION TARGETED	The civilian noninstitutionalized population residing in all 50 States and the District of Columbia, all ages.
DEMOGRAPHIC DATA	Household: Income, poverty status, household size, region, urbanization, tenancy, participation in Food Stamp and WIC programs. Individual: Gender, age, education, race, ethnicity (Hispanic or non-Hispanic), employment status of persons 15 years of age and older.
YEARS COLLECTED	1994-96.
SCHEDULE	Periodic.
GEOGRAPHIC ESTIMATES POSSIBLE	National; four U.S. Bureau of the Census regions; Standard Metropolitan Statistical Areas.

NOTES	Additional outcome variables: For each of 2 days of intake and 2-day averages, food intakes in grams of 71 USDA-defined food groups and subgroups, nutrient intakes of 28 nutrients and food components, nutrient intakes expressed as percentages of the 1989 Recommended Dietary Allowances, and Pyramid servings from 30 food groups. Various components of the dietary collection methodology will change from the 1994-96 survey to the next survey planned for the year 2000. Two 24-hour recalls will be collected by telephone instead of by in-person interview. Further research will assess the impact of the changes in dietary data collection methods on the comparability of the 1994-96 and the 2000 survey estimates. Nutrition and dietary intake data collected by the CSFII will be merged with comparable data collected by the National Health and Nutrition Examination Survey in the early 2000s. The integrated surveys are expected to yield dietary data on approximately 10,000 people annually.
CONTACT INFORMATION	Data system homepage: http://www.barc.usda.gov/bhnrc/foodsurvey/home.htm Data system phone: 301-504-0170 Agency homepage: http://www.usda.gov Agency phone: 202-720-2791

HIV/AIDS Case Surveillance System

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for HIV, STD, and TB Prevention (NCHSTP)
MODE OF ADMINISTRATION	Reports from health care providers are sent to the Local, State, or Territorial health departments. States and Territories share, on a voluntary basis, de-identified data with CDC.
SURVEY SAMPLE DESIGN	All 50 States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and other U.S. Territories report AIDS cases.
RESPONSE RATES	Response rates vary by geographic region and patient population. In most areas, reporting of AIDS cases is at least 85 percent complete. Reporting of deaths is about 90 percent complete.
PRIMARY SURVEY CONTENT	The AIDS case definition was modified in 1985, 1987, 1993 (for adults and adolescents), and 1994 (for pediatric cases). Data include mode of exposure to HIV, case definition category, and other clinical and demographic information.
POPULATION TARGETED	Health care providers and laboratories providing medical care and laboratory services to persons with HIV/AIDS. AIDS data are nationally representative.
DEMOGRAPHIC DATA	Age, gender, race, ethnicity, State and county of residence, country of birth, and living status.
YEARS COLLECTED	CDC first received reports of persons with AIDS in 1981.
SCHEDULE	Biannual. CDC's HIV/AIDS Surveillance Report is published twice a year. Supplemental reports are published on an ad hoc basis and available on the WEB at http://www.cdc.gov/nchstp/hiv_aids/stats/hasrlink.HTM and at http://www.cdc.gov/nchstp/hiv_aids/pubs/mmwr.htm.
GEOGRAPHIC ESTIMATES POSSIBLE	National, State, and Metropolitan Statistical Area. Data release policies dictate that no data that could be used to identify a person reported to the system may be released, thus, release of data in cell sizes less than or equal to three in a given category are prohibited.

NOTE	HIV/AIDS case surveillance is a population-based system.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nchstp/hiv_aids/surveillance.htm Data system phone: 404-639-2057 Agency homepage: http://www.cdc.gov/nchstp/od/nchstp.html Agency phone: 770-488-5401

Medical Expenditure Panel Survey (MEPS)

SPONSOR	U.S. Department of Health and Human Services: Agency for Healthcare Research and Quality (AHRQ) and Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS)
MODE OF ADMINISTRATION	The MEPS comprises four linked, integrated surveys, three of which are of interest here: the Household Component (HC): Computer-assisted in-person interviews; the Medical Provider Component (MPC): Telephone interviews and mailed surveys; and the Insurance Component (IC): Telephone interviews and mailed surveys.
SURVEY SAMPLE DESIGN	Each year, the MEPS Household Component (HC) sample is a nationally representative subsample of the 1995 National Health Interview Survey (NHIS), which uses a stratified multistage probability design that permits a continuous sampling of 358 primary sampling units. The 1996 HC collected data on 10,500 families and 24,000 individuals who participated in the 1995 NHIS. The MPC bases its sample on the HC. The IC partially bases its sample on the HC. Data are obtained through employers, unions, or other private health insurance sources identified by the HC respondents.
RESPONSE RATES	HC: Rate varies by round, so effective response rate varies by reference period of analysis; however, for estimates of calendar year 1996, MEPS has a response rate of 70 percent, including the NHIS and three rounds of data collection. MPC: Rate is over 90 percent. IC: Rate varies by type of establishment; it is over 90 percent for governments and less for employers.
PRIMARY SURVEY CONTENT	HC: Health conditions, health status, use of medical care services, charges and payments, access to care, satisfaction with care, health insurance coverage, income, and employment. MPC: Information on medical care events from medical providers identified by HC respondents, including expense information for events covered under various managed care plans. IC: Data on types of health insurance plans, associated premiums, and numbers of plans offered.
POPULATION TARGETED	HC: Civilian noninstitutionalized families and individuals. MPC: Medical providers identified by HC respondents. IC: Health insurance companies.

DEMOGRAPHIC DATA	Age, race, ethnicity, region, occupation, employment status, and household composition.
YEARS COLLECTED	1977, 1987, and 1996 to present.
SCHEDULE	Annual.
GEOGRAPHIC ESTIMATES POSSIBLE	National. The HC data also can be shown for the four Census regions (Northeast, Midwest, South, and West). Some State information can be provided for the IC.
NOTES	AHRQ fields a new MEPS panel each year. In this design, 2 calendar years of information are collected from each household in a series of five rounds of data collection over a 2 1/2-year period. These data are then linked with additional information collected from the respondents' medical providers, employers, and insurance providers. This series of data collection activities is repeated each year on a new sample of households, resulting in overlapping panels of survey data.
CONTACT INFORMATION	Data system homepage: http://www.meps.ahrq.gov/survey.htm#target2 Data system phone: 301-594-1406 Agency homepage: http://www.meps.ahrq.gov Agency phone: 301-594-1406

Monitoring the Future Study (MTF)

SPONSOR	U.S. Department of Health and Human Services, National Institutes of Health (NIH), National Institute on Drug Abuse (NIDA)
MODE OF ADMINISTRATION	Self-administered paper and pencil questionnaire completed by a random sample of 8th, 10th, and 12th graders.
SURVEY SAMPLE DESIGN	The Monitoring the Future Study utilizes a three-stage probability design that includes primary sampling units (PSUs), schools within PSUs, and students within schools. Up to 350 students per school are selected, either by randomly sampling classrooms or by some other random method that is convenient for the school and judged to be unbiased. Beginning in 1991, national samples of 8th and 10th graders were included. Approximately 50,000 responses are collected annually from all three grades combined.
RESPONSE RATES	The 1998 response rate for 8th, 10th, and 12th graders was 88, 87, and 82 percent, respectively.
PRIMARY SURVEY CONTENT	Cigarette, alcohol, and illicit drug use; attitudes and beliefs regarding drug use; attitudes of significant others regarding drug use; drug exposure and availability; life-style values, attitudes, and behaviors; participation in organized activities, leisure time activities, and religion; deviant behavior and victimization; health; college plans; and demographic data. Drug use and related attitudes are the key variables.
POPULATION TARGETED	Students in 8th, 10th, and 12th grades from public and private schools in the coterminous United States.
DEMOGRAPHIC DATA	Gender, race/ethnicity, parental education (used as a proxy for SES).
YEARS COLLECTED	1975 through present.
SCHEDULE	Annual.

GEOGRAPHIC ESTIMATES POSSIBLE	National, census region, and population density (Large Metropolitan Statistical Areas (MSAs), other MSA, non-MSA).
CONTACT INFORMATION	Data system homepage: http://www.isr.umich.edu/src/mtf/index.html Data system phone: Not available Agency homepage:http://www.nida.nih.gov Agency phone:301-443-6637

National Ambulatory Medical Care Survey (NAMCS)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS)
MODE OF ADMINISTRATION	Field personnel meet with participating physicians and instruct them in survey data collection methods. Physicians are asked to complete 1-page questionnaires on a sample of their office visits during an assigned reporting period. About 2,500 physicians were sampled in 1997 and over 24,000 survey encounter forms were completed.
SURVEY SAMPLE DESIGN	The NAMCS utilizes a three-stage survey design that involves probability samples of primary sampling units (PSUs), physician practices within PSUs, and patient visits within physician practices. Participating physicians are randomly assigned to a 1-week reporting period during the survey year, and a systematic random sample of patient visits during that period is selected by the physician, using a visit sampling rate that varies by the size of the practice. Sample data are weighted to produce national estimates of office visits.
RESPONSE RATES	The survey response rate has traditionally averaged around 70 percent.
PRIMARY SURVEY CONTENT	Information is obtained on various aspects of office visits, including physician practice characteristics, patient characteristics, and other visit characteristics. The survey form is redesigned every 2 years to address changing health data needs. Among the items collected are patient's age, gender, race, and ethnicity; patient's expressed reason for visiting the physician; place, cause, and intentionality of injury if any; physician's diagnoses; diagnostic services ordered or provided; therapeutic services; ambulatory surgical procedures performed; medications; providers seen; visit disposition; time spent with physician; and expected source of payment.

POPULATION TARGETED	The basic sampling unit is the physician-patient encounter or visit. Visits made to the offices of nonfederally employed, office-based physicians who are classified by the American Medical Association or the American Osteopathic Association as being primarily engaged in direct patient care but not in the specialties of anesthesiology, pathology, or radiology are included in the survey. Not included are contacts by telephone, visits made outside the physician's office, visits in hospitals or institutional settings, and visits made for administrative purposes only.
DEMOGRAPHIC DATA	Patient's age, gender, race, and ethnicity.
YEARS COLLECTED	Annual from 1973-81; again in 1985; resumed an annual schedule in 1989.
SCHEDULE	Annual.
GEOGRAPHIC ESTIMATES POSSIBLE	National; four regions.
NOTES	The NAMCS is a visit-based survey rather than a population-based survey. Therefore, estimates of incidence and prevalence of disease cannot be computed. The survey is cross-sectional in nature, and multiple visits may be made by the same person within the sample.
CONTACT INFORMATION	Data system: http://www.cdc.gov/nchs/about/major/ahcd/ahcd1.htm Data system phone: 301-458-4126 Agency homepage: http://www.cdc.gov/nchs Agency phone: 301-458-INFO (4636)

National Crime Victimization Survey (NCVS)

SPONSOR	U.S. Department of Justice, Bureau of Justice Statistics, Office of Justice Programs
MODE OF ADMINISTRATION	Interview: With the exception of the first and the fifth of a total of seven interviews, all interviews are done by phone using computer-assisted telephone interviewing (CATI). The first and fifth interviews are personal interviews using computer-assisted personal interviewing (CAPI).
SURVEY SAMPLE DESIGN	The NCVS uses a stratified, multistage cluster sample. Primary sampling units (PSUs) consist of counties, groups of counties, or large metropolitan areas. The 1994 survey sample households were drawn from the 1980-based sample design. Data are collected every year from a sample of approximately 50,000 households that includes about 100,000 people aged 12 years and older. PSUs remain in the sample for a total of 3 years. A total of seven interviews are conducted at 6-month intervals during the 3-year process.
RESPONSE RATES	Response rates have consistently remained around 95 percent (96 percent of eligible housing units and 92 percent of individuals in interviewed households).
PRIMARY SURVEY CONTENT	The NCVS counts incidents not reported to police and is one of two U.S. Department of Justice measures of crime in the United States. The survey contains a screening section with detailed questions and cues on victimizations and situations within which crimes may take place. Interviewers follow up positive responses and collect details about victimizations in incident reports.
POPULATION TARGETED	Civilian noninstitutionalized population 12 years and older residing in the United States.
DEMOGRAPHIC DATA	Age, gender, race, ethnicity, and income. Property crimes include data on age, race, ethnicity, and household size.
YEARS COLLECTED	1974 to present.
SCHEDULE	Annual.

GEOGRAPHIC ESTIMATES POSSIBLE	National.
CONTACT INFORMATION	Data system homepage: http://www.oip.usdoj.gov/bjs/cvict.htm#ncvs Data system phone: 202-616-3494 Agency homepage: http://www.oip.usdoj.gov/bjs Agency phone: 202-307-0770

National Health and Nutrition Examination Survey (NHANES)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS)
MODE OF ADMINISTRATION	In-person interview in the household and in a private setting in the mobile examination center. Standardized physical examinations and medical tests in mobile examination centers. Conducted in English and Spanish.
SURVEY SAMPLE DESIGN	The NHANES uses a stratified multistage probability sample, nationally representative of the U.S. civilian noninstitutionalized population. Approximately 5,000 people are examined at 15 locations each year. In NHANES III, children 2 months-5 years, persons 70 years and over, African Americans, and Mexican Americans were oversampled. Beginning in 1999, African Americans, Mexican Americans, adolescents, and older persons will be oversampled.
RESPONSE RATES	In NHANES III (1988-94): Household interview response rate was 86 percent; and the medical examination response rate was 78 percent.
PRIMARY SURVEY CONTENT	Chronic disease prevalence and conditions (including undiagnosed conditions), risk factors, diet and nutritional status, immunization status, infectious disease prevalence, health insurance, and measures of environmental exposures. Beginning in 1999, topics addressed include hearing, vision, mental health, anemia, diabetes, cardiovascular disease, osteoporosis, obesity, oral health, mental health, physical fitness, and functioning.
POPULATION TARGETED	For NHANES III, the civilian noninstitutionalized population residing in the United States ages 2 months and over. Beginning in 1999, people of all ages are included.
DEMOGRAPHIC DATA	Gender, age, education, race/ethnicity, place of birth, income, occupation, and industry.
YEARS COLLECTED	From 1960 to 1994, a total of seven national examination surveys have been conducted. Beginning in 1999, the survey will be conducted continuously.
SCHEDULE	Periodic (1960-94); annual beginning in 1999.

GEOGRAPHIC ESTIMATES POSSIBLE	National; four regions.
NOTES	Although the new NHANES will be conducted on a yearly basis, the annual sample size will be too small to provide reliable estimates for many measures and for most subgroups. Most analyses will require 3 years of data for reliable estimates. Nutrition and dietary intake data collected by the NHANES will be merged with comparable data colleted by the Continuing Survey of Food Intakes by Individuals in the early 2000s. The integrated surveys are expected to yield dietary data on approximately 10,000 people annually.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nchs/nhanes.htm Data system phone: 301-458-4667 Agency homepage: http://www.cdc.gov/nchs Agency phone: 301-458-INFO (4636)

National Health Interview Survey (NHIS)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS)
MODE OF ADMINISTRATION	Personal interview in households using computer-assisted personal interviewing (CAPI), administered by professional interviewers, and conducted in English and Spanish (for CAPI, Spanish version was initiated in mid-1998).
SURVEY SAMPLE DESIGN	The NHIS uses a stratified multistage probability design that permits a continuous sampling of 358 primary sampling units (PSUs), with over-sampling of African Americans and Hispanics. A typical NHIS sample for the data collection years 1995-2004 consists of approximately 7,000 second-stage units (segments) within a PSU. The expected sample of 43,000 occupied respondent households yields a probability sample of about 111,000 persons. The survey is designed so that the sample scheduled for each week is representative of the target population and the weekly samples are additive over time.
RESPONSE RATES	Response rates for the basic NHIS core questionnaire have ranged from 94 to 98 percent over the years, with rates of sample person components generally ranging from 85 to 90 percent of eligible respondents. Response rates for special health topics (supplements) have generally also been in this lower range. The effect, if any, of the new CAPI technology is not yet known.

PRIMARY SURVEY CONTENT	Information is obtained on demographic characteristics, illnesses, injuries, impairments, chronic conditions, utilization of health resources, health insurance, and other health topics. The core household interview asks about everyone in the household. Additional questions are asked of one sample adult and one sample child (under 18 years) per family in the household. The Sample adult questionnaire includes chronic health conditions and limitations in activity, health behaviors, health care access, health care provider contacts, immunizations, and AIDS knowledge and attitudes. The Sample child questionnaire includes questions about chronic health conditions, limitation of activities, health status, behavior problems, health care access and utilization, and immunizations. Child data are proxy-reported by a parent or other knowledgeable adult respondent. Adult sample person data are all self-report. Special modules are fielded periodically, and cover areas such as cancer, prevention, and disability.
POPULATION TARGETED	Civilian noninstitutionalized population residing in the United States.
DEMOGRAPHIC DATA	Gender, age, race/Hispanic ethnicity, education, income, marital status, place of birth, industry, and occupation.
YEARS COLLECTED	Continuously since 1957. Current sample design began in 1995; current questionnaire design began in 1997.
SCHEDULE	Annual.
GEOGRAPHIC ESTIMATES POSSIBLE	National; four regions; some of the 10 HHS regions, some States; metropolitan and nonmetropolitan areas.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nchs/nhis.htm Data system phone: 301-458-4001 Agency homepage: http://www.cdc.gov/nchs Agency phone: 301-458-INFO (4636)

National Hospital Ambulatory Medical Care Survey (NHAMCS)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS)
MODE OF ADMINISTRATION	Hospital staff are asked to complete 1-page questionnaires (Patient Record forms) on a sample of their patient visits during an assigned reporting period. About 400 emergency departments participated in 1997 and about 22,000 Patient Record forms were completed. About 230 outpatient departments participated in 1997 and about 30,000 Patient Record forms were completed.
SURVEY SAMPLE DESIGN	The NHAMCS utilizes a four-stage survey design that involves probability samples of primary sampling units (PSUs), hospitals with emergency departments (EDs) and/or outpatient departments (OPDs) within PSUs, EDs within hospitals and/or clinics within OPDs, and patient visits within EDs and/or OPDs. Hospital staff were asked to complete Patient Record forms for a systematic random sample of patient visits occurring during a randomly assigned 4-week reporting period during the survey year. Sample data are weighted to produce national estimates of patient visits.
RESPONSE RATES	The response rates are about 90 percent.
PRIMARY SURVEY CONTENT	NHAMCS includes two files: ED visits and OPD visits. Information is obtained on various aspects of patient visits, including patient characteristics, physician characteristics, and other visit characteristics. The survey form is redesigned every 2 years to address changing health data needs. Among the items collected are: patient's age, gender, race, and ethnicity; patient's expressed reason for visit; place, cause, work-relatedness, and intentionality of injury, if any; physician's diagnoses; diagnostic services ordered or provided; procedures provided; medications ordered, supplied, administered or continued; providers seen; visit disposition; urgency of visit; time spent with physician; and, expected source of payment.
POPULATION TARGETED	The basic sampling unit is the patient visit. In-person visits by patients to EDs and OPDs of non-Federal, short-stay, or general hospitals. Telephone contacts are excluded.

DEMOGRAPHIC DATA	Patient's age, gender, race, and ethnicity.
YEARS COLLECTED	Annual since 1992.
SCHEDULE	Annual.
GEOGRAPHIC ESTIMATES POSSIBLE	National, four regions.
NOTES	The NHAMCS is a visit-based survey rather than a population-based survey. Estimates of visits per person per year can be produced using Census civilian noninstitutionalized population estimates. The survey is cross-sectional in nature, and multiple visits may be made by the same person within the sample.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nchs/about/major/ahcd/ahcd1.htm Data system phone: 301-458-4126 Agency homepage: http://www.cdc.gov/nchs Agency phone: 301-458-INFO (4636)

National Hospital Discharge Survey (NHDS)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS)
MODE OF ADMINISTRATION	Manual sample selection and abstraction of inpatient medical records by field personnel or automated data collection through the purchase of data tapes from commercial abstracting sources, States, or hospitals.
SURVEY SAMPLE DESIGN	The NHDS utilizes a three-stage probability design that includes primary sampling units (PSUs) used for the 1985-94 NHIS, hospitals within PSUs, and discharges within hospitals. The largest hospitals were selected with certainty. The annual number of records included in the survey is approximately 260,000.
RESPONSE RATES	The survey response rate averages between 92 and 95 percent annually.
PRIMARY SURVEY CONTENT	Variables collected include: age; gender; race; ethnicity; admission and discharge dates (length of stay); discharge status; source of payment; hospital size, ownership, and region; from 1-7 diagnoses coded using the ICD-9-CM; and, from 0-4 procedures using the ICD-9-CM. The 1999 survey will use the ICD-10-CM.
POPULATION TARGETED	Hospital discharges from short-stay noninstitutional hospitals and general and children's hospitals regardless of length of stay, exclusive of military and U.S. Department of Veteran Affairs hospitals, located within the 50 States and the District of Columbia.
DEMOGRAPHIC DATA	Patient's age, gender, race, and ethnicity.
YEARS COLLECTED	1965 to present.
SCHEDULE	Annual.
GEOGRAPHIC ESTIMATES POSSIBLE	National, regional.

NOTES	Data on race are not reported by many hospitals because of the omission of a race field on hospital discharge reporting forms. More hospitals have automated their discharge systems in recent years and are using these forms. A comparison of NHDS data with data for those who reported being hospitalized in the NHIS (interview data were adjusted to exclude hospitalizations of 1 day or less) indicated that under reporting for whites was about 22 percent in 1991; the difference for African Americans was negligible. Hispanic origin is not reported for 85 percent of the NHDS records. (Kozak LJ. Under reporting of race in the National Hospital Discharge Survey. Advance data from vital and health statistics; no 265. Hyattsville, Maryland: National Center for Health Statistics. 1995.)
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nchs/about/major/hdasd/nhds.htm Data system phone: 301-458-4439 Agency homepage: http://www.cdc.gov/nchs Agency phone: 301-458-INFO (4636)

National Household Survey on Drug Abuse (NHSDA)

SPONSOR

U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA)

MODE OF ADMINISTRATION

Questionnaires are administered in the home by professional survey administrators. Starting in 1999, computer-assisted personal interview (CAPI) and audio computer-administered self interview (ACASI) for sensitive questions will be used. Prior surveys used paper and pencil. Self-respondents only; no respondent identifiers are used.

SURVEY SAMPLE DESIGN

Multistage national probability sample with oversampling of youth. In 1997, survey was administered to 24,505 persons aged 12 years and older, including 7,844 aged 12-17 years. Oversample of young people (aged 12-34 years), African Americans, and Hispanics in 1985-98 surveys. Oversample in California and Arizona in 1997 and 1998. In 1999, the sample size increased to 70,000 people, including 3,600-4,600 for the eight most populous States, and 900-1,000 for the other States. It will include 25,000 youth aged 12-17 years, 22,500 young adults ages 18-25, and 22,500 adults ages 26 years and older.

RESPONSE RATES

For 1997:	Total	12-17 years
Household response rate	93%	93%
Individual response rate	78%	83%
Overall response rate	73%	77%

Response rates are slightly higher among the Hispanic and African American populations.

PRIMARY SURVEY CONTENT

In 1999: Initiation, recency, and frequency of use of alcohol, tobacco (including smokeless, cigarettes, and cigars), marijuana, and other illicit drugs, prescription drug misuse; treatment and prevention-related items.

POPULATION TARGETED

Civilian noninstitutionalized population residing in the United States ages 12 and older.

DEMOGRAPHIC DATA

Gender, age, race/ethnicity, education, marital status, employment, income.

YEARS COLLECTED

1971 to present. Continuous since 1992.

SCHEDULE	Annual.
GEOGRAPHIC ESTIMATES POSSIBLE	National, regional. Beginning in 1999, direct State estimates will be possible for California, Texas, Michigan, Pennsylvania, New York, Florida, Illinois, and Ohio, and model-based estimates will be possible for other States.
NOTES	The sample size, the mode of administration and the survey content changed in 1999.
CONTACT INFORMATION	Data system homepage: http://www.samhsa.gov/OAS/nhsda/nhsda97/httoc.htm Data system phone: Not available Agency homepage: http://www.samhsa.gov Agency phone: 800-729-6686

National Notifiable Disease Surveillance System (NNDSS) and National Electronic Telecommunications System for Surveillance (NETSS)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), Epidemiology Program Office (EPO)
MODE OF ADMINISTRATION	Reports are submitted by health care providers and clinical laboratories to local or county health departments.
SURVEY SAMPLE DESIGN	States determine the diseases that are nationally notifiable and method of transmission.
RESPONSE RATES	Varies by disease and State. Severe clinical illnesses are likely to be reported. However, persons with clinically mild diseases and usually not associated with severe consequences either may not be seen in health-care settings or may not be reported by health-care providers. Estimates of underreporting have been made: only about 22 percent of congenital rubella syndrome are reported; 40-50 percent of measles cases; 40 percent of tetanus cases; and 33 percent of pertussis cases.
PRIMARY SURVEY CONTENT	The Council of State and Territorial Epidemiologists and CDC developed a list of diseases and conditions that are considered nationally notifiable. In 1999 the list included 52 diseases. Each State separately determines which diseases from the list will be reported. All States generally report the internationally quarantineable diseases in compliance with the World Health Organization regulations. Data include: Date, county, disease-specific epidemiologic information, and demographic characteristics.
POPULATION TARGETED	Entire population of all States, District of Columbia, and five U.S. territories.
DEMOGRAPHIC DATA	Race, ethnicity, age, gender.

YEARS COLLECTED	The NNDSS was authorized in 1878, with all States, the District of Columbia, Hawaii, and Puerto Rico participating in 1928. The NETSS was developed in 1984 to enable weekly reporting of national morbidity to enhance rapid identification of epidemics with more timely and complete patterns of occurrences. All States participated in NETSS by 1990. NNDSS provides summary data and NETSS provides individual records.
SCHEDULE	Annual.
GEOGRAPHIC ESTIMATES POSSIBLE	National, regional, State, county.
NOTES	Although State health department staff and their CDC colleagues make every attempt to obtain complete demographic information associated with nationally notifiable cases of disease, some data (particularly the variables of race and ethnicity) are not available for some cases of disease. Laws, regulations, and mandates for public health reporting (including specific data items that are reported) are under the authority of individual States, and in some States, race and ethnicity may not be approved for reporting to the national level. Race and ethnicity data may also be unknown when cases are reported from a laboratory or when cases are reported as aggregate disease totals.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/epo/dphs/netss.htm Data system phone: 404-639-0080 Agency homepage: http://www.cdc.gov/epo Agency phone: 404-639-3636

National Profile of U.S. Local Health Departments (NPLHD)

SPONSOR	Conducted by the National Association of County and City Health Officials, funded through a U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), cooperative agreement
MODE OF ADMINISTRATION	Self-administered questionnaires.
SURVEY SAMPLE DESIGN	Census of U.S. local health departments.
RESPONSE RATES	The response rate for the 1996-97 NPLHD was 88 percent (2,492 of 2,834 local health departments).
PRIMARY SURVEY CONTENT	Descriptive data on local health departments nationwide including jurisdiction type, services provided, staff size, community partnerships and collaborative relationships, managed care, and expenditures.
POPULATION TARGETED	Local health departments in the United States.
DEMOGRAPHIC DATA	Jurisdiction type, population size.
YEARS COLLECTED	1989; 1992-93; 1996-97.
SCHEDULE	Periodic.
GEOGRAPHIC ESTIMATES POSSIBLE	National, regional, State, and county. Data will be geocoded.

NOTES	The NPLHD is a cross-sectional survey, not a longitudinal survey. Questions change from survey to survey.
CONTACT INFORMATION	Data system homepage: http://www.naccho.org Data system phone: 202-783-5550 Agency homepage: http://www.cdc.gov/phppo Agency phone: 770-488-2460

National Survey of Family Growth (NSFG)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS)
MODE OF ADMINISTRATION	Computer-assisted personal interview (CAPI) by professional female interviewers. In addition, a self-administered section for more sensitive topics (audio-CASI), in which respondents hear questions on headphones (and read on a computer screen) and enter responses on the computer themselves.
SURVEY SAMPLE DESIGN	The 1995 survey was a multistage probability design consisting of households that had been interviewed in 198 PSUs in the National Health Interview Survey in 1993. Of the 13,795 eligible females in the sample, 10,847 were interviewed. Black and Hispanic females were oversampled.
RESPONSE RATES	Response rates were around 80 percent; in 1995, the response rate was 78.5 percent.
PRIMARY SURVEY CONTENT	The NSFG contains data on factors affecting birth and pregnancy rates, adoption, and maternal and infant health. These factors include sexual activity, marriage, divorce and remarriage, unmarried cohabitation, contraception and sterilization, infertility, breastfeeding, pregnancy loss, low birthweight, and use of medical care for family planning and infertility.
POPULATION TARGETED	Civilian noninstitutionalized females aged 15-44 years residing in the United States.
DEMOGRAPHIC DATA	Age, race, Hispanic ethnicity, family income, educational attainment.
YEARS COLLECTED	1973; 1976; 1982; 1988; and 1995. Future surveys will be conducted in 2001, 2004, and 2007.
SCHEDULE	Periodic.
GEOGRAPHIC ESTIMATES POSSIBLE	National; four regions; metropolitan and nonmetropolitan areas; some of the 10 DHHS regions.

NOTES	The sample size of future surveys will increase. Males will be sampled as well as females. Ages 15-19 and 20-24 years will be oversampled as well as black and Hispanic population groups.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nchs/nsfg.htm Data system phone: 301-458-4385 Agency homepage: http://www.cdc.gov/nchs Agency phone: 301-458-INFO (4636)

National Vital Statistics System, Mortality (NVSS-M)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS)
MODE OF ADMINISTRATION	Administrative records (death certificates) completed by physicians, coroners, medical examiners, and funeral directors are filed with State vital statistics offices; selected statistical information is forwarded to NCHS to be merged into a national statistical file. Beginning with 1989, revised standard certificates replaced the 1978 versions; the next scheduled revision is 2002. Demographic information on the death certificate is provided by the funeral director based on information supplied by an informant. Medical certification of cause of death is provided by a physician, medical examiner, or coroner.
SURVEY SAMPLE DESIGN	NVSS mortality files include data for 50 States, the District of Columbia, and the territories of Puerto Rico, Virgin Islands, Guam, and American Samoa. All deaths are included (approximately 2.2 to 2.3 million annually).
RESPONSE RATES	N/A.
PRIMARY SURVEY CONTENT	Year of death, place of decedent's residence, place death occurred, age at death, day of week and month of death, Hispanic origin, race, marital status, injury at work, hospital and patient status, place of birth, gender, underlying and multiple causes of death for all States, injury at work (beginning in 1993), hospital and patient status.
POPULATION TARGETED	The entire U.S. population.

DEMOGRAPHIC DATA	Gender, race, Hispanic origin (beginning in 1984), age at death, place of decedent's residence, educational attainment (beginning in 1989) for selected States, marital status, and industry and occupation for selected States. Race and ethnic origin are separate items on the death certificate. Beginning with 1992 data, California, Hawaii, Illinois, New Jersey, New York, Texas, and Washington reported expanded Asian and Pacific Islander categories of Asian Indian, Korean, Vietnamese, Samoan, and Guamanian. The rest of the States reported a combined Other Asian and Pacific Islander category in addition to the categories of white, black, American Indian, Chinese, Hawaiian, Japanese, and Filipino that all States report. As of 1997, all States report Hispanic origin. The categories reported include Mexican, Puerto Rican, Cuban, Central and South American, and Other Hispanic.
YEARS COLLECTED	The data system began in 1900 but not all States participated before 1933. Coverage for deaths has been complete since 1933.
SCHEDULE	Annual
GEOGRAPHIC ESTIMATES POSSIBLE	National, regional, State, and county. Beginning with 1989 data, some changes were initiated to increase confidentiality protection. Identifying information including date of death and geographic identifiers for counties of less than 100,000 persons are not available for public use.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nchs/about/major/dvs/mortdata.htm Data system phone: 301-458-4555 Agency homepage: http://www.cdc.gov/nchs Agency phone: 301-458-INFO (4636)

National Vital Statistics System - Natality (NVSS-N)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS)
MODE OF ADMINISTRATION	Hospital and attendants at delivery are responsible for completion of administrative records (birth certificates), which are filed with State vital statistics offices; selected statistical information is forwarded to NCHS to be merged into a national statistical file. Demographic information is provided by the mother. Medical and health information is based on hospital and other records. Beginning with 1989, revised standard certificates replaced the 1978 versions. The next scheduled revision is in 2002.
SURVEY SAMPLE DESIGN	NVSS natality data include data for 50 States, the District of Columbia, and the territories of Puerto Rico, Virgin Islands, and Guam. All births are included (approximately 3.9 - 4.0 million annually).
RESPONSE RATES	N/A.
PRIMARY SURVEY CONTENT	Year of birth, place of birth, prenatal care, demographic information and health status of baby, demographic information of mother and father, pregnancy history of mother, medical and health data about the delivery, pregnancy, and mother.
POPULATION TARGETED	All registered births in the United States.
DEMOGRAPHIC DATA	Gender of baby. Gender, race, Hispanic origin, age, educational attainment, and marital status of mother and father.
YEARS COLLECTED	The data system began in 1900 but not all States participated before 1933. Before 1972, only a 50 percent sample of birth certificates was received. Since 1972 all birth certificates are included.
SCHEDULE	Annual.

GEOGRAPHIC ESTIMATES POSSIBLE	National, regional, State, county, and city.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nchs/about/major/natality/natality.htm Data system phone: 301-458-4555 Agency homepage: http://www.cdc.gov/nchs Agency phone: 301-458-INFO (4636)

1999 National Worksite Health Promotion Survey (NWHPS)

SPONSOR	Association for Worksite Health Promotion (AWHP), the U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion (ODPHP), and William M. Mercer, Incorporated.
MODE OF ADMINISTRATION	Computer-assisted telephone interview (CATI).
SURVEY SAMPLE DESIGN	Worksites were defined as an organizational entity comprising 50 or more employees working at a particular geographic location. The sample was drawn randomly from the Dun & Bradstreet universe of employers and classified according to the number of employees at each worksite and SIC code. Size strata were 50-99, 100-249, 250-749, and 750 and more employees. Public sector employers were excluded. Results of the survey were weighted based on the size of the worksite. A total of 1,544 worksites were surveyed.
RESPONSE RATES	Overall response rate was 60 percent.
PRIMARY SURVEY CONTENT	The survey covered employers' health risk and prevention programs and policies provided to their employees; corporate characteristics; corporate perspectives on health, values, support, and barriers; use of health plans for current and future health promotion delivery; delivery mechanisms, cost sharing and incentives; and disease- and demand-management programs and trends.
POPULATION TARGETED	Worksites with 50 or more employees, excluding public sector worksites.
DEMOGRAPHIC DATA	Not applicable.
YEARS COLLECTED	November 1998 - August 1999.
SCHEDULE	Periodic.
GEOGRAPHIC ESTIMATES POSSIBLE	National (excluding Alaska and Hawaii).

NOTES	There are plans to repeat this survey at least twice between 2001 and 2007 to obtain updates for the Healthy People 2010 objectives that target worksite health promotion programs.
CONTACT INFORMATION	Data system homepage: http://www.awhp.org Data system phone: 847-480-9574 (NWHP) 612-897-8800 (Mercer, Incorporated) Agency homepage: http://odphp.osophs.dhhs.gov Agency phone: 202-205-8611 (ODPHP)

School Health Policies and Programs Study (SHPPS)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)
MODE OF ADMINISTRATION	State and district level: Self-administered, mailed questionnaire. School and classroom level: On-site, structured personal interview.
SURVEY SAMPLE DESIGN	All 50 (and the District of Columbia) State education agencies; a national probability sample of public and private school districts; a national sample of public and private schools (K-12), and a random sample of required health education and physical education classes. For SHPPS 2000, about 1,400 districts and 1,900 schools will be asked to participate. Respondents will include administrators, teachers, school nurses, counselors, food service staff, secretaries, and other school personnel.
RESPONSE RATES	For the 1994 SHPPS: State education agencies, 100 percent; School districts, 82 percent; Schools, 79 percent; and Health education teachers, 63 percent and Physical education teachers, 70 percent.
PRIMARY SURVEY CONTENT	Characteristics (such as policies, administration, planning, program content, program requirements, teaching methodologies, professional preparation of staff, efforts to promote programs, accessibility of services, training needs, etc.) of school health programs, including health education, physical education, food service, health services, and school health policies were measured in 1994. In SHPPS 2000, mental health and social services, faculty and staff health promotion, and family and community involvement will be added.
POPULATION TARGETED	Education agencies in all 50 States and the District of Columbia; public and private school districts; public and private elementary, middle/junior high, and senior high schools; required health education and physical education courses.

DEMOGRAPHIC DATA	For schools, demographic variables include school size, type of control, percent of children receiving free or reduced school lunches, student-teacher ratios, and race/ethnic distribution of the students.
YEARS COLLECTED	1994; planned for 2000.
SCHEDULE	Periodic: Every 4-6 years.
GEOGRAPHIC ESTIMATES POSSIBLE	National estimates for school districts, schools, and health education and physical education courses; State estimates for State education agencies.
NOTES	SHPPS is the most comprehensive source of national data on policies and programs that support school health programs. SHPPS 2000 will survey elementary schools for the first time as well as all eight components of the school health program.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nccdphp/dash/shpps/index.htm Data system phone: 770-488-3254 Agency homepage: http://www.cdc.gov/nccdphp Agency phone: 770-488-5401

STD Case Reporting Surveillance System (STD-CRSS)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for HIV, STD, and TB Prevention (NCHSTP), Division of STD Prevention (DSTDP)
MODE OF ADMINISTRATION	Reports from health care providers are sent to the Local/State/Territorial health departments.
SURVEY SAMPLE DESIGN	All 50 States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, Guam, and 64 select large cities report STD cases.
RESPONSE RATES	Response rates vary by disease and patient population. Estimates of completeness for case reporting of syphilis, gonorrhea, and chlamydia are 65, 50, and 20 percent, respectively.
PRIMARY SURVEY CONTENT	Summary case count data are submitted monthly, quarterly, and annually using OMB approved hard copy forms. Electronic line-listed data are submitted by approximately half of the reporting States. Disease-specific information and demographics are available.
POPULATION TARGETED	Health care providers and laboratories providing medical care and laboratory services to persons with STDs.
DEMOGRAPHIC DATA	Age, gender, race, ethnicity, State and county of residence, country of birth.
YEARS COLLECTED	CDC first provided reports of persons with STDs in 1941.
SCHEDULE	Annual. CDC's STD Surveillance Report is published annually and is supplemented by the Chlamydia Prevalence Monitoring Annual Report and the Gonococcal Isolate Surveillance Project (GISP) Annual Report. Report is available on the web at http://www.cdc.gov/wonder/STD/Contents.shtml .

GEOGRAPHIC ESTIMATES POSSIBLE	National, State, regional, and for selected large cities. Data release policies dictate that no data that could be used to identify a person reported to the system may be released; thus, release of data in cell sizes less than or equal to five in a given category are prohibited.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nchstp/dstd/Stats_Trends/Stats_and_Trends.htm Data system phone: 404-639-8363 Agency homepage: http://www.cdc.gov/nchstp/od/nchstp.html Agency phone: 404-639-2070

United States Renal Data System (USRDS)

SPONSOR	U.S. Department of Health and Human Services, National Institutes for Health (NIH), National Institute for Diabetes and Digestive and Kidney Disease (NIDDK) in collaboration with the U.S. Department of Health and Human Services, Health Care Financing Administration (HCFA).
MODE OF ADMINISTRATION	Continuous mandated reporting from physicians who treat end-stage renal disease (ESRD).
SURVEY SAMPLE DESIGN	The database consists of patient and facility records from the HCFA ESRD Program Management and Medical Information System, the Annual Facility Survey, and data on transplant followup and Medicare parts A and B services derived from Medicare claims. These HCFA-supplied data are supplemented by data from the Social Security Administration, the U.S. Department of Veterans Affairs facilities, the U.S. Bureau of the Census, local and national ESRD provider databases, and international ESRD registries. Patient-specific data are compiled from medical records, as well as data on medical providers and treatment facilities. Special studies utilize random samples of patient population medical records.
RESPONSE RATES	About 96 percent of all treated ESRD patients in the United States are covered.
PRIMARY SURVEY CONTENT	Date of onset of ESRD, treatment modality (including dialysis and kidney transplantation), causes of death, patient survival, hospitalization, cost and cost effectiveness, and institutional providers of ESRD treatment. Questions in special surveys cover behavioral risk factors (for example, alcohol and tobacco use), preventive health measures, health status, limitation of activity, and health care access and utilization.
POPULATION TARGETED	Medicare and non-Medicare ESRD patients. The USRDS contains data on approximately 906,000 patients treated between 1977 and 1997.
DEMOGRAPHIC DATA	Gender, age, income, education, race, Hispanic ethnicity (available since April 1995).
YEARS COLLECTED	Continuously since 1988.
SCHEDULE	Annual.

GEOGRAPHIC ESTIMATES POSSIBLE	National, State, and county.
NOTES	The USRDS provides data on the incidence, prevalence, mortality rates, and trends over time of end-stage renal disease by primary diagnosis, treatment modality, and sociodemographic variables. Data are published in an Annual Data Report, which is available on the Internet at http://www.med.umich.edu/usrds. Other data collected by the database include services resources; services utilization; and services expenditures and financing.
CONTACT INFORMATION	Data system homepage: http://www.med.umich.edu/usrds Survey description: http://www.os.dhhs.gov/progorg/aspe/minority/minnih9.htm Agency homepage: http://www.niddk.nih.gov Agency phone: 301-594-1932

Youth Risk Behavior Surveillance System (YRBSS)

SPONSOR	U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)
MODE OF ADMINISTRATION	School based; administered in classrooms by professional survey administrators. Anonymous self-administered questionnaires. Make-up surveys conducted for absentees.
SURVEY SAMPLE DESIGN	The YRBSS has several components all of which are administered among samples of 9th through 12th grade students: a national survey, State surveys administered by the States, local surveys administered by 16 of the largest cities, a survey of the Navaho Indian Nation schools, and a census of Bureau of Indian Affairs schools. The national survey uses a three-stage probability sample. It is completed biennially by students in about 150 public and private schools, grades 9-12. African-American and Hispanic/Latino students are over sampled in the national survey. In the 1997 national survey, N= 16,262; grade 9 = 23.6 percent; grade 10 = 23.9 percent; grade 11 = 25.2 percent; and grade 12 = 27.2 percent.
RESPONSE RATES	For 1997: School response rate 79% Individual response rate 87% Overall response rate 69%
PRIMARY SURVEY CONTENT	Six categories of health risk behaviors: injury, tobacco use, alcohol and other drug use, sexual behavior, diet and nutrition, and physical activity.
POPULATION TARGETED	Students in grades 9-12.
DEMOGRAPHIC DATA	Gender, age, grade, race/ethnicity, urbanicity of school.
YEARS COLLECTED	1990; biennially since 1991.
SCHEDULE	Biennial (odd-numbered years).

GEOGRAPHIC ESTIMATES POSSIBLE	National survey: national and four regions; State survey: 39 States in 1997; and Local, 16 selected large urban school districts in 1997.
NOTES	This is one of the few school-based surveys that conducts a makeup survey for students who are absent during the original survey yielding excellent coverage of the in-school youth population. Other components of the YRBSS include a national alternative school survey, middle school surveys in selected States, and the National College Health Risk Behavior Survey. For the 1999 YRBS, questionnaire revisions were made for the first time since 1990 to be responsive to the Healthy People 2010 objectives and current trends.
CONTACT INFORMATION	Data system homepage: http://www.cdc.gov/nccdphp/dash/yrbs/ov.htm Data system phone: 770-488-3254 Agency homepage: http://www.cdc.gov/nccdphp Agency phone: 770-488-5401

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Appendices

Appendix A. Healthy People 2010 Consultative Process

1995

Healthy People Consortium expanded to include all State mental health, substance abuse, and environmental agencies to encourage their participation in the development of the objectives and their use of the objectives at State and local levels.

September 12-13, 1996

CDC/NCHS convenes APHA, ASTHO, and NACCHO with States in the CDC Assessment Initiative to examine the data successes and challenges with Healthy People 2000. States participating include Iowa, Kansas, Ohio, Oregon, Minnesota, Missouri, and South Carolina.

October 1996 to February 1997

Healthy People Consortium member focus groups review Healthy People 2000 evaluating what has been useful and should be preserved and what should be recast.

November 15, 1996

Healthy People Consortium Meeting in New York, New York, *Building the Prevention Agenda for 2010: Lessons Learned.* Keynote speaker Dr. Ilona Kickbusch, Director of the Division of Health Promotion, Education, and Communication of the World Health Organization, delivers keynote address.

1997 and ongoing:

Health and Human Service agencies begin to lead Healthy People Work Groups to develop draft objectives for public review and comment.

April 21, 1997

Secretary's Council on National Health Promotion and Disease Prevention holds a public meeting on the Healthy People 2010 objectives. The Council reviews lessons learned from Healthy People 2000, addresses the need to improve data collection, and discusses the proposed framework for Healthy People 2010, which incorporates two overarching goals: increase years of healthy life and eliminate health disparities.

May 14, 1997

Measuring Performance Lessons Learned and Challenges Ahead, a Federal interagency conference, is held to examine issues in performance measurement under the Government Performance and Results Act (GPRA) focused on the linkage between Healthy People and annual GPRA measures.

July 1997

Release of *Stakeholder's Report*, announcing the results of the Consortium focus group process, on www.health.gov/healthypeople.

July 1997

Partnership for Prevention, a Healthy People Consortium member, with support from the Robert Wood Johnson Foundation, establishes the Healthy People Business Advisory Council to increase the involvement of the business community in Healthy People 2010 development.

September 15, 1997, to December 15, 1997

Developing Objectives for Healthy People 2010 is released in printed and electronic form on the Internet for a 90-day public comment period on the goals, objectives, and framework of Healthy People.

November 7, 1997

Healthy People Consortium Meeting in Indianapolis, Indiana. Reducing Health Disparities: How Far Have We Come? Keynote speakers representing minority population groups address disparities in health.

December 17, 1997

Nearly 800 comments are received on the Healthy People 2010 framework and are available to the public on the Internet at www.health.gov/healthypeople.

February 19-20, 1998

Symposium on National Strategies for Renewing Health for All at the Pan American Health Organization engages 24 countries from the Western Hemisphere in using health targets. Healthy People represents the United States contribution to "World Health for All" strategy.

March 6, 1998

Health and Human Services Working Group on Sentinel Objectives releases the *Leading Health Indicators for Healthy People 2010* report, which describes the potential uses for and provides examples of possible approaches to sentinel objectives.

April 30, 1998

Annual Secretary's Council public meeting takes place. The Council endorses goal of eliminating health disparities and affirms that one target should be set for all population groups. The Council discusses the proposed draft objectives for 2010 and approves the development of leading health indicators, a set of selected objectives chosen to capture the state of the Nation's health.

April to October 1998

Getting Started for 2010, a series of five audio conferences, features national and State successes and challenges in using health objectives. All 50 States participate.

August 1998

Institute of Medicine (IOM) releases its *Preliminary Report on the Leading Health Indicators*.

September 15, 1998, to December 15, 1998

Healthy People 2010: Draft for Public Comment, containing the draft of 531 objectives proposed in 26 focus areas, is released for public comment. Comments accepted via the Internet, by mail, and at regional meetings.

September 17-18, 1998

CDC/NCHS holds a workshop on measuring years of healthy life, resulting in a report called *Identifying Summary Measures for Healthy People 2010.*

October 5-6, 1998

Two hundred and sixty-eight people attend the Regional Healthy People Meeting in Philadelphia, Pennsylvania, to provide input on developing Healthy People 2010 objectives.

October 21-22, 1998

Two hundred and thirty-six people attend the Regional Healthy People Meeting in New Orleans, Louisiana, to provide input on developing Healthy People 2010 objectives.

November 5-6, 1998

Four hundred and fifty-six people attend the Regional Healthy People Meeting in Chicago, Illinois, to provide input on developing Healthy People 2010 objectives.

November 13, 1998

Four hundred and sixty-nine people attend the Public Hearing and Healthy People Consortium Meeting, Building the Next Generation of Healthy People, in Washington, D.C., with speakers Dr. Julius Richmond and Dr. David Satcher.

December 2-3, 1998

Three hundred and nineteen people attend the Regional Healthy People Meeting in Seattle, Washington, to provide input on developing Healthy People 2010 objectives.

December 9-10, 1998

Three hundred and fifty-four people attend the Regional Healthy People Meeting in Sacramento, California, to provide input on developing Healthy People 2010 objectives.

December 17, 1998

More than 11,000 public comments on the draft Healthy People 2010 objectives are received from people in every State, the District of Columbia, and Puerto Rico. Comments can be viewed at www.health.gov/healthypeople.

January 1999

IOM produces the report *Leading Health Indicators for Healthy People 2010: Second Interim Report.* The report summarizes the efforts of the IOM Committee on Leading Health Indicators for Healthy People 2010 to develop sample sets of leading health indicators.

January 25, 1999

The Partnerships for Health in the New Millennium Conference Planning Committee, comprising representatives from the Healthy People Consortium, Partnerships for Networked Consumer Health Information Steering Committee, academia, State and local government, and private organizations, identifies plenary speakers, develops the program, and sets criteria for sessions for the conference.

April 1999

IOM produces the report *Leading Health Indicators for Healthy People 2010: Final Report*, detailing IOM's development of three sets of leading health indicators.

April 23, 1999

Annual Secretary's Council public meeting takes place. The Council reviews the IOM's report on leading health indicators and endorses the general form of the emerging set of Leading Health Indicators, discusses and helps refine the proposed draft objectives for 2010, and approves plans for launching Healthy People 2010 in January 2000.

June 1999 and ongoing

State and local Healthy People 2010 plans are developed.

June 1999

Focus groups on Leading Health Indicators are conducted.

September 1999

Healthy People 2010 Toolkit: A Field Guide to Health Planning is released as a resource for State and local planning. The Toolkit includes national and State examples of engaging partners, setting objectives, and sustaining the initiatives. *Healthy People 2010 Toolkit* is available on the Internet at www.health.gov/healthypeople/state/toolkit.

January 24-28, 2000

Assistant Secretary for Health and Surgeon General David Satcher releases *Healthy People 2010* at the Partnerships for Health in the New Millennium conference in Washington, D.C.

Appendix B. Contributors to Healthy People 2010

Healthy People 2010 is the product of a national effort that has involved individuals, organizations, and agencies from across the United States. Work on the report began in 1996 with a meeting of the Healthy People 2000 Consortium and the convening of focus groups. A public comment period in 1997 and testimony from six public hearings in 1998 provided valuable public input. The development of the objectives was guided by the Secretary's Council on National Health Promotion and Disease Prevention Objectives for 2010, chaired by Donna E. Shalala with David Satcher as Vice Chair, and by the Healthy People Steering Committee, currently chaired by Nicole Lurie. The 28 focus areas were developed by work groups coordinated by lead agency scientists from the Federal Government.

Preparation of the report was sponsored by the U.S. Department of Health and Human Services, through a project coordinated by the Office of Disease Prevention and Health Promotion under the leadership of Claude Earl Fox, Susanne A. Stoiber, Linda D. Meyers, and Randolph F. Wykoff.

Principal staff responsibility for the project belonged to Deborah R. Maiese and Mary Jo Deering. Mark S. Smolinski had primary responsibility for the introductory section. Carter R. Blakey and Janice T. Radak provided critical editorial support. Other current and former staff members from the Office of Disease Prevention and Health Promotion who helped in the coordination and development of Healthy People 2010 included DelShaun Adams, David Baker, Gloria Barnes, Cynthia Baur, Phyllis Carroll, Christine Cichetti, Ellis Davis, Tom Eng, Kenneth Fisher, Yolande Gary, Kristine Gebbie, Toni M. Goodwin, Kate-Louise Gottfried, Miryam Granthon, Matthew Guidry, Raymond Han, Jim Harrell, Leslie Hsu, Sally Jones, Woodie Kessel, Lindsay Kim, Paul Kim, Ann Marie Lee, Joan Lyon, Rika Maeshiro, Kathryn McMurry, Robin Moore, Cindy Nordlie, Emmeline Ochiai, Jerome Paulson, Dalton Paxman, Irene Randell, Natiqua Riley, Kiven Robinson, Gloria Robledo, Janet Samorodin, Sandy Saunders, Stephanie Smith, India Stroman, Tom Vischi, and Kelly Woodward. Preventive Medicine Residents and medical students providing research assistance included Madhavi Battineni, Joy L. Bottoms, Wayne Brandes, Dominic Cheung Chow, Penny Shelton-Hoffman, Robin McFee, J. Patrick Moulds, Alex Nettles, Elpidoforos Soteriades, Peter Thornquist, Edward Van Oeveren, Stephanie Weller, and Amanda Williams. J. Michael McGinnis and Robert Valdez were consultants to the 2010 development.

Linda Bailey and Mark S. Smolinski coordinated the development of the Leading Health Indicators. This effort was guided by an interagency work group and the Healthy People Steering Committee which included Lois Albarelli, David R. Arday, David Atkins, Delton Atkinson, Olivia Carter-Pokras, Lynn Cates, Melissa H. Clarke, Marsha G. Davenport, Tuei Doong, Margaret Gilliam, Chuck Gollmar, William R. Harlan, Jim Harrell, Suzanne G. Haynes, Wanda K. Jones, Diane

Justice, Nicole Lurie, Evelyn Kappeler, Richard J. Klein, Mary Ann MacKenzie, John Monahon, J. Henry Montes, Paul W. Nannis, Eileen Parish, Kate Rickard, Carol Roddy, Theresa Rogers, Dorita Sewell, Mary Beth Skupien, Philip B. Smith, Christine G. Spain, Matthew Stagner, Irma Tetzloff, Betsy L. Thompson, Martina Vogel-Taylor, and Diane K. Wagener. The National Academy of Sciences, Institute of Medicine, Committee on Leading Health Indicators for Healthy People 2010 included Susan Allan, Roger Bulger, Carole A. Chrvala, Donna D. Duncan, Neal Halfon, Barbara S. Hulka, Thomas J. Kean, Kelly Norsingle, Scott C. Ratzan, Stephen C. Schoenbaum, Mark Smith, Shoshanna Sofaer, Kathleen Stratton, and Robert B. Wallace.

The Division of Health Promotion Statistics of the National Center for Health Statitics, Centers for Disease Control and Prevention, provided statistical advice and developed data for the Healthy People objectives. Diane K. Wagener served as Acting Division Director, and staff members included Jeanette Guyton-Krishnan, Elizabeth Jackson, Richard J. Klein, Cheryl Rose, Colleen Ryan, J. Fred Seitz, Thomas Socey, Kathleen Turczyn, Jennie Wald, and Jean Williams.

Social & Health Services, Ltd., the National Health Information Center and ODPHP contractor, developed the Healthy People Web site and handled the production of the *Healthy People 2010* document under the leadership of Lewis Eigen and Ramona Arnett. Nancy Klein managed the editing and production of the document. Other contributing staff members from SHS included Mark Akbayrak, Anwar Aziz, Tamara Bailey, Keith Barbour, Stacey Berry, Amy Bielski, Tiffanie Bilbrey, Tobie Bilbrey, Barbara Blue, Doreen Bonnett, Christine Botsford, Sharon Boyd, Qiana Bowie, Nicole Carson, Edward Cavanagh, Alyson Chmielewski, Jody Cole, David Cummings, Rosemarie Dempsey, Carolyn Diaz, Vivian Doidge, Bryan Elrod, Bradley Eng-Kohn, Bryce Gaylor, Jaime Geyer, Jennifer Geyer, Char Glendening, Ayanna Grant, Adriane Griffen, Deborah Hill, Alfred R. Imhoff, Denise Jones, Susan Kanaan, William Keating, John Klein, Linda Lee, Lilian Lopez, George Mitchell, Mary Moien, Eric Moore, Melanie Morrow, William Niles, Michael Peck, Kevin Pierson, Elaine Rahbar, Ann Redmon, Anne Restino, Carli Richard, Jeff Rife, Sheldon Robinson, Charles Scott, Tanya Singer, Adil Sisman, Sedat Sisman, Ugur Sisman, Steve Sonner, Craig Steinburg, Henry Stryker, Mary Sy, Emily Tinkler, Lisa R. Van Wagner, Van Wall, Arlene Weitzman, Dennis Williams, Todd Witiak, Ralph Yang, and Mike Zhang.

IQ Solutions handled the production of Healthy People 2010: Understanding and Improving Health. IQ staff members included Ted Buxton, E.J. King-Carter, Michael Huddleston, Jim Libbey, Josue Martinez, Craig Packer, Meredith Pond, and Karen Stroud.

While it is not possible to recognize herein all those citizens and officials who made contributions to Healthy People 2010, their efforts were invaluable to development of the final product.

Appendix C. The Secretary's Council on National Health Promotion and Disease Prevention Objectives for 2010

Approved on September 5, 1996, and announced in the *Federal Register* on October 21, 1996, the Secretary's Council on National Health Promotion and Disease Prevention Objectives for 2010 oversees the development of Healthy People 2010. The Secretary of the Department of Health and Human Services (HHS) chairs this Council, with the Assistant Secretary for Health and Surgeon General sitting as vice chair. Members include all former Assistant Secretaries for Health and all current heads of HHS operating divisions. The Council meets yearly to guide the development policies of Healthy People 2010.

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(as of January 1, 2000)

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Vice Chair

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Max Lum, Centers for Disease Control and Prevention, Washington, DC

John Shoemaker, Prevent Blindness America, Schaumburg, IL

Cynthia Stuen, Lighthouse International, New York, NY

John Whitener, American Optometric Association, Alexandria, VA

Appendix G. Healthy People Consortium

Academy of General Dentistry

Aerobics and Fitness Association of America

Alcohol and Drug Problems Association

Alliance for Aging Research

Alliance for Health

Amateur Athletic Union

American Academy of Child and Adolescent Psychiatry

American Academy of Family Physicians

American Academy of Nursing

American Academy of Nurse Practitioners

American Academy of Ophthalmology

American Academy of Orthopaedic Surgeons

American Academy of Otolaryngology–Head and Neck Surgery

American Academy of Pain Management

American Academy of Pediatric Dentistry

American Academy of Pediatrics

American Academy of Physical Medicine and Rehabilitation

American Academy of Physician Assistants

American Alliance for Health, Physical Education, and Dance

American Art Therapy Association

American Association for Clinical Chemistry

American Association for Dental Research

American Association for Health Education

American Association for Marriage and Family Therapy

American Association for Respiratory Care

American Association for the Advancement of Science

American Association of Certified Orthopedists

American Association of Colleges of Nursing

American Association of Colleges of Osteopathic Medicine

American Association of Colleges of Pharmacy

American Association of Colleges for Teacher Education

American Association of Dental Schools

American Association of Family and Consumer Services

American Association of Health Plans

American Association of Homes for the Aging

American Association of Occupational Health Nurses

American Association of Pathologists' Assistants

American Association of Public Health Dentistry

American Association of Public Health Physicians

American Association of Retired Persons

American Association of School Administrators

American Association of Suicidiology

American Association of University Affiliated Programs

American Association on Health and Disability

American Association on Mental Retardation

American Cancer Society

American College Health Association

American College of Acupuncture

American College of Cardiology

American College of Clinical Pharmacy

American College of Emergency Physicians

American College of Gastroenterology

American College of Health Care Administrators

American College of Health Care Executives

American College of Nurse-Midwives

American College of Nutrition

American College of Obstetricians and Gynecologists

American College of Occupational and Environmental Medicine

American College of Physicians

American College of Preventive Medicine

American College of Radiology

American College of Sports and Medicine

American Correctional Health Services Association

American Council on Alcoholism

American Council on Exercise

American Counseling Association

American Dental Association

American Dental Hygienists' Association

American Diabetes Association

American Dietetic Association

American Disability Prevention and Wellness Association

American Federation of Teachers

American Geriatrics Society

American Health Lawyers Association

American Heart Association

American Highway Users Alliance

American Hospital Association

American Indian Health Care Association

American Institute for Preventive Medicine

American Kinesiotherapy, Inc.

American Liver Association

American Lung Association

American Meat Institute

American Medical Association

American Medical Student Association

American Music Therapy Association

American Nurses Association

American Occupational Therapy Association

American Optometric Association

American Orthopaedic Society for Sports Medicine

American Osteopathic Academy of Sports Medicine

American Osteopathic Association

American Osteopathic Healthcare Association

American Pharmaceutical Association

American Physical Therapy Association

American Podiatric Medical Association

American Psychological Association

American Psychiatric Association

American Psychiatric Nurses Association

American Public Health Association

American Red Cross

American Rehabilitation Association

American Rehabilitation Counseling Association

American Running and Fitness Association

American School Food Service Association

American School Health Association

American Social Health Association

American Society for Clinical Nutrition

American Society for Gastrointestinal Endoscopy

American Society for Microbiology

American Society for Nutritional Sciences

American Society for Parental and Enteral Nutrition

American Society for Pharmacology and Experimental Therapeutics

American Society of Addiction Medicine

American Society of Health System Pharmacists

American Society of Human Genetics

American Speech-Language-Hearing Association

American Spinal Injury Foundation

American Statistical Association

American Thoracic Society

American Trauma Society

American Veterinary Medical Association

Aquatic Exercise Association

Arthritis Foundation

Asian and Pacific Islander American Health Forum

Asociacion Nacional Pro Personas Mayores

Association for Applied Psychophysiology and Biofeedback

Association for Hospital Medical Education

Association for Professionals in Infection Control and Epidemiology

Association for the Advancement of Automotive Medicine

Association for the Care of Children's Health

Association for Worksite Health Promotion

Association of Academic Health Centers

Association of American Indian Physicians

Association of American Medical Colleges

Association of Asian Pacific Community Health Organizations

Association of Clinical Scientists

Association of Community Health Nursing Educators

Association of Food and Drug Officials

Association of Maternal and Child Health Programs

Association of Occupational and Environmental Clinics

Association of Pediatric Oncology Nurses

Association of Public Health Laboratories

Association of Rehabilitation Nurses

Association of Schools of Public Health

Association of Schools of Allied Health Professions

Association of State and Territorial Chronic Disease Program Directors

Association of State and Territorial Dental Directors

Association of State and Territorial Directors of Health Promotion and Public Health Education

Association of State and Terriorial Directors of Nursing

Association of State and Territorial Health Officials

Association of State and Territorial Public Health Laboratory Directors

Association of State and Territorial Public Health Nutrition Directors

Association of State and Territorial Public Health Social Workers

Association of Teachers of Preventive Medicine

Association of Technical Personnel in Opthalmology

Association of Women's Health. Obstetric. and Neonatal Nurses

Asthma and Allergy Foundation of America

Blue Cross and Blue Shield Association

Boy Scouts of America

Brain Injury Association

Camp Fire Boys and Girls

Cardiovascular Credentialing International

Catholic Health Association of the United States

Center for Science in the Public Interest

Center to Prevent Handgun Violence

Coalition for Consumer Health and Safety

Coalition for Healthier Cities and Communities

College of American Pathologists

Consortium of Social Science Associations

Council for Responsible Nutrition

Council of Medical Specialty Societies

Council of Regional Networks for Genetic Services

Council of State and Territorial Epidemiologists

Council of the Great City Schools

Emergency Nurses Association

Employee Assistance Professional Association

Environmental Council of the States

Eye Bank Association of America

Farm Safety 4 Just Kids

Federation of American Societies for Experimental Biology

Federation of Behavioral. Psychological. and Cognitive Sciences

Food Marketing Institute

Future Homemakers of America

General Federation of Women's Clubs

Gerontological Society of America

Girl Scouts of the United States of America

Global Health Council

Grocery Manufacturers of America

Health Industry Manufacturers Association

Health Insurance Association of America

Health Ministers Association

Health Science Communications Association

Healthier People Network

HIV Prevention Education Project

Institute of Food Technologists

International Association for Dental Research

International Health, Racquet, and Sports Association

International Hearing Society

International Lactation Consultant Association

International Life Sciences Institute

International Patient Education Council

La Leche League International

Lamaze International

Learning Disabilities Association of America

March of Dimes Birth Defects Foundation

Maternity Center Association

Midwives Alliance of North America

Migrant Clinicians Network

Mothers Against Drunk Driving

National 4-H Council

National AIDS Fund

National Alliance for the Mentally Ill

National Alliance of Black School Educators

National Alliance of Nurse Practitioners

National Alliance of Senior Citizens

National Asian Pacific American Families Against Substance Abuse

National Association for Family and Community Education

National Association for Healthcare Quality

National Association for Home Care

National Association for Human Development

National Association for Public Employee Wellness

National Association for Public Health

National Association for Public Health Statistics and Information Systems

National Association for Public Worksite Health Promotion

National Association for Sport and Physical Education

National Association of Biology Teachers

National Association of Childbearing Centers

National Association of Children's Hospitals and Related Institutions

National Association of Community Health Centers

National Association of Counties

National Association of County and City Health Officials

National Association of Elementary School Principals

National Association of Governor's Councils on Physical Fitness and Sports

National Association of Local Boards of Health

National Association of Music Therapy

National Association of Neonatal Nurses

National Association of Neighborhoods

National Association of Optometrists and Optiticians

National Association of Pediatric Nurse Associates and Practitioners

National Association of Retail Druggists

National Association of School Nurses

National Association of School Psychologists

National Association of Secondary School Principals

National Association of Social Workers

National Association of State Alcohol and Drug Abuse Directors

National Association of State Mental Health Program Directors

National Association of State Network Program Coordinators

National Association of State School Nurse Consultants

National Association Rehabilitation Facilities

National Athletic Trainers' Association

National Black Nurses Association

National Board of Medical Examiners

National Center for Tobacco-Free Kids

National Civic League

National Coalition Against Sexual Assault

National Coalition of Hispanic Health and Human Services Organizations

National Commission Against Drunk Driving

National Committee to Prevent Child Abuse

National Community Pharmacists Association

National Conference of State Legislatures

National Consumers League

National Council for Adoption

National Council for the Education of Health Professionals in Health Promotion

National Council of La Raza

National Council on Alcoholism and Drug Dependence

National Council on Community Hospitals

National Council on Health Laboratory Services

National Council on Patient Information and Education

National Council on Safe-Help and Public Health

National Council on the Aging

National Dairy Council

National Education Association

National Environmental Health Association

National Family Planning and Reproductive Health Association

National Federation for Specialty Nursing Organizations

National Federation of State High School Associations

National Food Processors Association

National Head Injury Foundation

National Health Council

National Health Lawyers Association

National Healthy Mothers, Healthy Babies Coalition

National Hispanic Council on Aging

National Hispanic Medical Association

National Hispanic Nurses Association

National Inhalant Prevention Coalition

National Institute for Fitness and Sports

National Kidney Foundation

National League for Nursing

National League of Cities

National Lesbian and Gay Health Association

National Medical Association

National Mental Health Association

National Middle School Association

National Minority AIDS Council

National Minority Health Association

National Nurses Society on Addictions

National Organization for Women

National Organization on Adolescent Pregnancy, Parenting, and Prevention

National Osteoporosis Foundation

National Pediculosis Association

National Peer Helpers Association

National Pest Control Association

National PTA

National Recreation and Park Association

National SAFE KIDS Campaign

National Safety Council

National School Boards Association

National Society of Allied Health

National Strength and Conditioning Association

National Stroke Association

National Wellness Institute

National Women's Health Network

Network of Employers for Traffic Safety

North American Association for the Study of Obesity

Nursing Network on Violence Against Women

Oncology Nursing Society

Opticians Association of America

Oral Health America

Pan American Health Organization

Partnership for Prevention

People's Medical Society

Pharmaceutical Researchers and Manufacturers of America

Physicians for a Violence-Free Society

Planned Parenthood Federation of America

Poison Prevention Week Council

Population Association of America

Prevent Blindness America

Produce for Better Health Foundation

Produce Marketing Association

Public Health Institute

Road Runners Club of America

Salt Institute

Salvation Army

Sexuality Information and Education Council of United States

Shape Up America!

Society for Academic Emergency Medicine

Society for Adolescent Medicine

Society for Healthcare Strategy and Market Development

Society for Nutrition Education

Society for Public Health Education

Society for the Advancement of Women's Health Research

Society of Behavioral Medicine

Society of General Internal Medicine

Society of Prospective Medicine

Society of State Directors of Health, Physical Education, and Recreation

Spina Bifida Association of America

State Family Planning Administrators

Stop Teenage Addiction to Tobacco

Sugar Association

The Arc, a National Organization on Mental Retardation

Unitarian Universalist, Seventh Principle Project

United Methodist Association of Health and Welfare Ministries

United States Eye Injury Registry

U.S. Conference of Mayors

VHA

Visiting Nurse Association of America

Washington Business Group on Health

Wellness Councils of America

Women's Sports Foundation

Wound, Ostomy, and Continence Nurses Society

YMCA of the USA

YWCA of the USA

Appendix H. Baselines for Age-Adjusted Mortality Objectives Using Rates Age-Adjusted to 1940 and to 2000 Standards: United States, 1997

Objective		Total population		Male		Female		White		Black or African American		American Indian or Alaska Native		Asian or Pacific Islander		Hispanic or Latino[1]	
number	Short objective text	1940	2000	1940	2000	1940	2000	1940	2000	1940	2000	1940	2000	1940	2000	1940	2000
3.1	All cancer	125.6	205.7	150.4	258.0	107.3	171.6	122.9	202.2	165.2	262.1	86.6	131.8	75.4	127.2	76.4	125.5
3.2	Lung cancer	37.3	58.1	50.5	81.6	26.9	41.4	37.1	58.0	45.4	67.9	24.1	36.3	16.9	28.9	14.2	23.9
3.3	Female breast cancer	19.4	28.6	...	...	19.4	28.6	18.9	28.0	26.7	37.7	9.4	13.1	9.2	12.6	12.6	17.8
3.4	Cervical cancer	2.5	3.2	...	...	2.5	3.2	2.2	2.8	4.8	6.5	3.0	4.0	2.2	3.0	3.0	3.8
3.5	Colorectal cancer	12.0	21.6	14.6	26.0	10.0	18.4	11.6	21.1	16.8	28.8	9.1	14.5	7.6	13.5	7.5	12.8
3.6a	Oropharangeal cancer (all males)	3.1	4.6	3.1	4.6	...	...	2.8	4.2	6.0	8.1	3.1	4.1	2.8	3.9	2.0	3.0
3.6b	Oropharangeal cancer (all females)	1.1	1.8	...	...	1.1	1.8	1.0	1.7	1.6	2.2	*	*	0.9	1.3	0.5	0.8
3.7	Prostate cancer (aged 45-74 years)	13.9	33.8	13.9	33.8	...	...	12.6	31.1	31.4	71.1	8.6	19.3	5.3	14.5	8.6	20.8
3.8	Melanoma	1.9	2.8	2.6	4.0	1.3	1.9	2.1	3.1	0.3	0.6	*	*	0.4	0.6	0.5	0.8
5.5	Diabetes-related	40.7	75.2	47.2	87.1	35.6	66.7	37.0	69.8	76.3	129.9	66.4	106.5	30.7	61.6	48.2	86.1
12.1	Coronary heart disease	100.4	215.9	137.3	276.3	70.1	170.4	97.7	213.7	136.2	257.3	75.8	133.7	55.2	125.2	70.7	151.2
12.6	Stroke	25.9	61.8	27.9	63.9	24.2	59.7	24.0	59.8	42.5	81.6	19.9	39.2	24.4	54.6	19.4	40
13.16	HIV infection	5.8	6.1	9.1	9.7	2.6	2.7	3.3	3.5	24.9	26.6	2.4	2.5	0.9	0.9	8.2	8.9
15.3	Firearm-related injuries	12.2	12.1	21.1	21.4	3.4	3.4	10.0	10.4	25.7	22.9	11.9	11.4	5.3	5.0	11.6	10.7
15.8	Poisoning	6.1	6.6	8.8	9.4	3.5	3.9	6.2	6.6	7.4	8.1	7.5	8.0	1.7	2.0	5.4	5.7
15.9	Suffocation	3.4	4.0	5.1	5.9	1.7	2.3	3.3	3.9	3.7	4.5	5.9	6.2	3.0	3.8	2.6	3.0
15.13	Unintentional injuries	29.3	34.8	42.0	49.2	17.1	21.8	28.9	34.3	34.7	39.8	57.8	62.7	16.3	20.9	27.1	30.1
15.15	Motor vehicle crashes	15.5	15.8	21.1	21.7	10.0	10.4	15.5	15.8	16.6	17.0	31.1	31.5	9.5	10.6	14.9	15.2
15.25	Fire	1.1	1.3	1.4	1.7	0.8	1.0	0.9	1.1	2.6	3.4	2.0	2.2	0.6	0.8	0.6	0.8
15.27	Falls	2.2	4.6	3.3	6.3	1.4	3.3	2.3	4.7	1.8	3.1	3.7	5.6	1.6	3.5	1.9	3.3
15.29	Drowning	1.5	1.5	2.5	2.4	0.6	0.6	1.4	1.4	2.0	1.9	3.8	3.7	1.6	1.6	1.5	1.4
15.32	Homicide	7.8	7.2	12.3	11.2	3.3	3.2	4.6	4.3	27.8	25.2	10.8	10.4	4.3	4.1	10.8	9.9
18.1	Suicide	10.6	11.6	17.4	19.4	4.1	4.4	11.3	12.3	6.3	6.3	12.9	12.4	6.2	7.0	6.1	6.4
24.25	Chronic obstructive pulmonary deaths (aged 45 years and older)	76.9	117.4	95.5	154.8	64.2	95.5	79.8	122.2	59.0	82.4	54.4	75.9	30.9	55.1	31.0	55.3
26.2	Cirrhosis	7.4	9.6	10.5	13.6	4.5	6.2	7.3	9.6	8.7	10.7	20.6	24.2	2.4	3.4	12.0	15.9
26.3	Drug-induced	5.6	6.0	7.9	8.3	3.3	3.6	5.4	5.7	8.2	9.0	6.2	6.6	1.4	1.6	5.7	6.0

...Not applicable.

*Data are unreliable. Based on fewer than 20 deaths.

[1] Hispanic origin can be of any race.

Appendix I. ICD-9 Codes for Cause-Specific Healthy People 2010 Mortality Objectives

Objective Number	Cause of Death[*]	ICD-9 Identifying Codes
3-1	Cancer (all sites)	140-208
3-2	Lung cancer	162
3-3	Female breast cancer	174
3-4	Cervical cancer	180
3-5	Colorectal cancer	153-154
3-6	Oropharyngeal cancer	140-149
3-7	Prostate cancer	185
3-8	Malignant melanoma	172
4-2	Cardiovascular mortality in ESRD patients	390-448
5-5[†]	Diabetes-related deaths	250
5-6[†]	Diabetes-related deaths among known persons with diabetes	250
5-7[†]	Cardiovascular deaths among persons with diabetes	Underlying cause: 390-348 Contributing cause: 250
8-19	Carbon monoxide poisoning	E868.2, E868.3, E868.8, E868.9
10-4	Food allergies	Developmental
12-1	Coronary heart disease	402, 410-414, 429.2
12-8	Stroke	430-438
13-14	HIV infection	042-044
15-3	Firearm-related deaths	E922.0-E922.9; E955.0-E955.4; E965.0-E965.4; E970; E985.0- E985.4
15-7	Poisoning	E850.0-E869.9; E950.0-E952.9; E962.0-E962.9; E972; E980.0-E982.9
15-8	Suffocation	E911-E913.9; E953; E963; E983.0-E983.9
15-12	Unintentional injuries	E800-E869, E880-E929
15-14	Motor vehicle crashes	E810-E819
15-15	Pedestrian deaths	E810-E819[‡]

15-24	Residential fires	E890-E899
15-26	Falls	E880-E886, E888
15-28	Drowning	E830, E832, E910
15-31	Homicide	E960-E969
16-3	Sudden infant death syndrome	798.0
16-4	Maternal deaths	630-676
18-1	Suicide	E950-E959
20-1[†]	Work-related injuries	E800-E899
20-4[†]	Pneumoconiosis	500-505
20-5	Work-related homicide	E960-E969
24-1	Asthma	493
24-15	Chronic obstructive pulmonary diseases	490-496
26-1	Motor-vehicle crash deaths: a. Alcohol-related c. Drug-related	E810-E819[‡]
26-2	Cirrhosis	571
26-3	Drug-induced deaths	292; 304; 305.2-305.9; E850-E858; E950.0-E950.5; E962.0; E980.0-E980.5

[*] Unless otherwise specified, Healthy People 2010 uses underlying cause-of-death data.

[†] Healthy People 2010 uses multiple-cause-of-death data.

[‡] Includes only those deaths assigned to E810-E819 that were associated with alcohol-related or drug-related crashes.

Appendix J. ICD-9-CM Codes for Cause-Specific Healthy People 2010 Morbidity Objectives

Objective Number	Condition	ICD-9-CM Identifying Codes
2-10	Vertebral fractures	805.0, 805.2, 805.4, 805.8
5-10	Lower extremity amputations in persons with diabetes	84.1 (Procedure Code)
12-7	Heart failure	428
14-17	Peptic ulcer	531-534
15-1	Nonfatal head injuries	800-801, 803-804, 850-854, 870-873, 925
15-2	Nonfatal spinal cord injuries	806, 952
15-5	Nonfatal firearm-related injuries	E922.0-E922.9; E955.0-E955.4; E965.0-E965.4; E970; E985.0-E985.4, E970
15-6	Nonfatal poisonings	E850.0-E869.9, E950.0-E952.9, E962.0-E962.9, E980.0-E982.9, E972
15-11	Injuries	E860-E869, E880-E929, E950, E960-E969, E980-E989, E970-E979, E990-E999
15-13	Nonfatal unintentional injuries	Developmental
15-27	Hip fractures	820
15-29	Nonfatal dog bite injuries	E906.0
16-5	Maternal morbidity	641.0-641.9; all 666; 642.4-642.7; 648.8; 664.2, 664.3, 664.5, 665.0-665.1; 665.2-665.9; 658.4; 670; 659.2; 659.3; 646.6; 674.1-674.3; 668; 671.3-671.4; 673; 669.0-669.4; 674.8-674.9; 646.7; 643.2; 671.5; 674.0; 648.0; 642.0-642.3, 642.9; 648.5-648.6; 646.2; 672
16-17	Spina bifida	740-742.0
24-2	Asthma	493
24-3	Asthma	493
28-14	Otitis media	381.0-381.4; 382

Appendix K. List of Abbreviations and Acronyms

AAMC	Association of American Medical Colleges
AAP	American Academy of Pediatrics
AAPCC	American Association of Poison Control Centers
AAT	alpha-1-antitrypsin
ABCs	Active Bacterial Core Surveillance
ABLES	Adult Blood Lead Epidemiology and Surveillance
ACE	angiotensin-converting enzyme
ACF	Administration on Children and Families
ACIP	Advisory Committee on Immunization Practices
ACS	American Cancer Society
ADA	Americans with Disabilities Act
ADHD	attention-deficit hyperactivity disorder
ADLs	activities of daily living
ADPKD	autosomal dominant polycystic kidney disease
ADR	adverse drug reaction
AF	atrial fibrillation
AFDC	Aid to Families with Dependent Children
AGI	Alan Guttmacher Institute
AHA	American Heart Association
AHCPR	(See AHRQ)
AHEC	Area Health Education Center
AHRQ	Agency for Healthcare Research and Quality, formerly Agency for Health Care Policy and Research (AHCPR)
AHS	American Housing Survey
AIDS	acquired immunodeficiency syndrome
AIRS	Aerometric Information Retrieval System
ALA	American Lung Association
ALR	administrative license revocation
AMA	American Medical Association
AMD	age-related macular degeneration
AMI	acute myocardial infarction
AoA	Administration on Aging
AODM	adult-onset diabetes mellitus
aP	acellular pertussis
APEX/PH	Assessment Protocol for Excellence in Public Health
APHIS	Animal and Plant Health Inspection Service
ARS	Agricultural Research Service
ASD	adult spectrum of disease

ASHP	American Society for Health-Systems Pharmacists
ASOII	Annual Survey of Occupational Injuries and Illnesses
ASPE	Assistant Secretary for Planning and Evaluation
ASPH	Association of Schools of Public Health
ASSIST	American Stop Smoking Intervention Study
ASTDHPPHE	Association of State and Territorial Directors of Health Promotion and Public Health Education
ASTHO	Association of State and Territorial Health Officials
ATPM	Association of Teachers of Preventive Medicine
ATSDR	Agency for Toxic Substances and Disease Registry
AV	arteriovenous
AWPH	Association for Worksite Health Promotion
AZT	zidovudine (formerly azidothymidine)
BAC	blood alcohol concentration
BEST	Biomonitoring of Environmental Status and Trends
BHPr	Bureau of Health Professions
BJS	Bureau of Justice Statistics
BLL	blood lead level
BLS	Bureau of Labor Statistics
BMD	bone mineral density
BMI	body mass index
BOC	U.S. Bureau of the Census
BPHC	Bureau of Primary Health Care
BRFS	Behavioral Risk Factor Survey
BRFSS	Behavioral Risk Factor Surveillance System
BUN	blood urea nitrogen
CAD	coronary artery disease
CAHPS	Consumer Assessment of Health Plans Survey
CD	conduct disorder
CDC	Centers for Disease Control and Prevention
CFOI	Census of Fatal Occupational Injuries
CFR	Child Fatality Review Process
CFRT	Child Fatality Review Teams
CFSAN	Center for Food Safety and Applied Nutrition
CHIP	Child Health Insurance Program
CHD	coronary heart disease
CMHS	Center for Mental Health Services
CNS	central nervous system
COPD	chronic obstructive pulmonary disease
CPR	cardiopulmonary resuscitation
CPS	Clinical Preventive Services

CPSC	Consumer Product Safety Commission
CPT	current procedural terminology
CRC	colorectal cancer
CREES	Cooperative State Research, Education, and Extension Service
CSAP	Center for Substance Abuse Prevention
CSAT	Center for Substance Abuse Treatment
CSFII	Continuing Survey of Food Intakes by Individuals
CSTE	Council of State and Territorial Epidemiologists
CVD	cardiovascular disease
CVM	Center for Veterinary Medicine
DALYs	disability-adjusted life years
DASH	Division of Adolescent and School Health
DAWN	Drug Abuse Warning Network
DHHS	U.S. Department of Health and Human Services
DM	diabetes mellitus
DNA	data not analyzed
DNC	data not collected
DOC	U.S. Department of Commerce
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOJ	U.S. Department of Justice
DOL	U.S. Department of Labor
DOQI	dialysis outcomes quality initiative
DOT	U.S. Department of Transportation
DQIP	Diabetes Quality Improvement Project
DRE	digital rectal examination
DSU	data statistically unreliable
DTaP	diphtheria-tetanus-pertussis
DTBE	Division of Tuberculosis Elimination
DVD	digital video disk
DWI	driving while intoxicated
EAP	employee assistance program
ECA	Environmental Catchment Area
ECC	early childhood caries
ECG	electrocardiogram
ECP	emergency contraceptive pills
ED	emergency department
ED	U.S. Department of Education
EDF	Environmental Defense Fund
EIA	Energy Information Administration

EME	established market economies
EMS	emergency medical services
EMT	emergency medical technician
EMTALA	Emergency Medical Treatment and Active Labor Act
EPA	Environmental Protection Agency
EPACT	Energy Policy Act of of 1992
EPC	Evidence-based Practice Center
EPCRA	Emergency Planning and Community Right-To-Know Act
EPO	Epidemiology Program Office
ER	emergency room
ESRD	end-stage renal disease
FARS	Fatality Analysis Reporting System
FAS	Fetal Alcohol Syndrome
FBI	Federal Bureau of Investigation
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FHA	Federal Highway Administration
FOBT	fecal occult blood test
FPL	Federal poverty level
FSIS	Food Safety and Inspection Service
FSS	Food Safety Survey
GAO	General Accounting Office
GBD	global burden of disease
GBS	group B streptococcal
GDM	gestational diabetes mellitus
GED	General Education Development
GES	General Estimates System
GFR	glomerular filtration rate
GHG	greenhouse gas
GIS	geographical information system
GISP	Gonococcal Isolate Surveillance Project
GMP	good manufacturing practices
GPRA	Government Performance and Results Act
HAART	highly active antiretroviral therapy
HACCP	Hazard Analysis Critical Control Point
HALYs	health-adjusted life years
HAV	hepatitis A virus
HBIG	hepatitis B immunoglobulin
HBsAg	hepatitis B surface antigen
HBV	hepatitis B virus

HCBS	Home and Community-Based Service
HCFA	Health Care Financing Administration
HCUP	Health Care Cost and Utilization Project
HCV	hepatitis C virus
HDL	high-density lipoprotein
HEDIS	Health Plan Employer Data and Information Set
HEI	Healthy Eating Index
HepB	hepatitis B
HERS	Heart and Estrogen/Progestin Replacement Study
HHS	Department of Health and Human Services
Hib	Hæmophilus influenzæ type B
HIP	Health Improvement Plan
HIV	human immunodeficiency virus
HMO	health maintenance organization
HPSA	health professional shortage area
HPV	human papillomavirus
HRQOL	health-related quality of life
HRSA	Health Resources and Services Administration
HSV-2	herpes simplex virus 2
HUD	Department of Housing and Urban Development
IAQ	indoor air quality
ICA	International Communication Association
ICAN	Inter-Agency Council on Child Abuse and Neglect
ICARIS	Injury Control and Risk Survey
ICD	International Classification of Diseases
ICIDH-2	International Classification of Impairments, Disabilities, and Handicaps
ICPD	International Conference on Population and Development
ICU	intensive care unit
IDDM	insulin-dependent diabetes mellitus
IgA	immunoglobulin A
IHS	Indian Health Service
IM	infant mortality
IOM	Institute of Medicine
IPV	inactivated poliovirus vaccine
IPV	intimate partner violence
IRIS	Integrated Risk Information System
IRMO	Information Resources Management Office
IT	information technology
IUD	intrauterine device
IUGR	intrauterine growth retardation

JCAHO	Joint Commission for the Accreditation of Healthcare Organizations
JODM	juvenile-onset diabetes mellitus
LBP	low back pain
LBW	low birth weight
LDL	low-density lipoprotein
LPN	licensed practical nurse
LTC	long-term care
MAC	Mycobacterium avium complex
MADDSP	Metropolitan Atlanta Developmental Disabilities Surveillance Program
MCHB	Maternal and Child Health Bureau
MCL	maximum contaminant level
MCO	managed care organization
MDS	minimum data set
MEPS	Medical Expenditure Panel Survey
MMR	measles, mumps, and rubella vaccine
MMWR	Morbidity and Mortality Weekly Report
MSA	metropolitan statistical area
MSM	men who have sex with men
MUA/P	Medically Underserved Area/Population
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NACCHO	National Association of County and City Health Officials
NACO	National Association of Counties
NAEPP	National Asthma Education and Prevention Program
NAMCS	National Ambulatory Medical Care Survey
NaSH	National Surveillance System for Hospital Health Care Workers
NBDPN	National Birth Defects Prevention Network
NBS	newborn screening
NCA	National Communication Association
NCANDS	National Child Abuse and Neglect Data System
NCCAN	National Center for Child Abuse and Neglect
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion
NCC MERP	National Coordinating Council for Medication Error Reporting and Prevention
NCEH	National Center for Environmental Health
NCEP	National Cholesterol Education Program
NCES	National Center for Educational Statistics
NCHSR	National Center for Health Services Research
NCHS	National Center for Health Statistics
NCHSTP	National Center for HIV, STD, and TB Prevention

NCI	National Cancer Institute
NCID	National Center for Infectious Diseases
NCIPC	National Center for Injury Prevention and Control
NCPA	National Community Pharmacy Association
NCPIE	National Council on Patient Information and Education
NCPS	National Center for Prevention Services
NCQA	National Committee on Quality Assurance
NCRSR	National Congenital Rubella Syndrome Registry
NCSD	National Coalition of STD Directors
NCSDR	National Commission on Sleep Disorders Research
NCUTLO	National Committee on Uniform Traffic Law and Ordinances
NCVHS	National Committee on Vital and Health Statistics
NCVS	National Crime Victimization Survey
NEISS	National Electronic Injury Surveillance System
NETSS	National Electronic Telecommunications System for Surveillance
NFIRS	National Fire Incidence Reporting System
NHAMCS	National Hospital Ambulatory Medical Care Survey
NHANES	National Health and Nutrition Examination Survey
NHBPEP	National High Blood Pressure Education Program
NHDS	National Hospital Discharge Survey
NHII	national health information infrastructure
NHIS	National Health Interview Survey
NHLBI	National Heart, Lung, and Blood Institute
NHSDA	National Household Survey on Drug Abuse
NHTSA	National Highway Traffic Safety Administration
NIAAA	National Institute on Alcohol Abuse and Alcoholism
NICHD	National Institute of Child Health and Human Development
NIDA	National Institute on Drug Abuse
NIDCR	National Institute of Dental and Craniofacial Research, formerly National Institute of Dental Research (NIDR)
NIDDK	National Institute of Diabetes and Digestive and Kidney Diseases
NIDDM	non-insulin-dependent diabetes mellitus
NIDR	(See NIDCR)
NIDRR	National Institute on Disability and Rehabilitation Research
NIEHS	National Institute of Environmental Health Sciences
NIH	National Institutes of Health
NIHL	noise-induced hearing loss
NIJ	National Institute of Justice
NIMH	National Institute of Mental Health
NIOSH	National Institute for Occupational Safety and Health
NIP	National Immunization Program

NIS	National Immunization Survey
NLM	National Library of Medicine
NME	new molecular entity
NNDSS	National Notifiable Disease Surveillance System
NNHS	National Nursing Home Survey
NNISS	National Nosocomial Infections Surveillance System
NOES	National Occupational Exposure Survey
NOPUS	National Occupant Protection Use Survey
NORA	National Occupational Research Agenda
NPCR	National Program of Cancer Registries
NPL	National Priorities List
NPSF	National Patient Safety Foundation
NPTS	National Personal Transportation Survey
NRDC	Natural Resources Defense Council
NRT	nicotine replacement therapy
NSAIDs	nonsteroidal antiinflammatory drugs
NSAM	National Survey of Adolescent Males
NSBA	National School Boards Association
NSEPs	needle and syringe exchange programs
NSFG	National Survey of Family Growth
NSSPM	National Surveillance System for Pneumoconiosis Mortality
NTDs	neural tube defects
NTOF	National Traumatic Occupational Fatalities Surveillance System
NTOMS	National Treatment Outcomes Monitoring System
NVAP	National Vaccine Advisory Committee
NVSS	National Vital Statistics System
NWHPS	1999 National Worksite Health Promotion Survey
OAR	Office of Air and Radiation
OAS	Office of the Assistant Secretary
OASD	Office of the Assistant Secretary of Defense
OASH	Office of the Assistant Secretary for Health
OCAN	Office of Child Abuse and Neglect
ODH	Office on Disability and Health
ODPHP	Office of Disease Prevention and Health Promotion
OMB	Office of Management and Budget
ONDCP	Office of National Drug Control Policy
OPA	Office of Population Affairs
OPEL	Office of Planning, Evaluation, and Legislation
OPHS	Office of Public Health and Science
OPPTS	Office of Pollution, Prevention, and Toxic Substances

OPV	oral polio vaccine
ORA	Office of Research and Analysis
OSA	obstructive sleep apnea
OSDs	occupational skin diseases or disorders
OSERS	Office of Special Education and Rehabilitative Services
OSH	Office of the Secretary of Health
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste Enforcement and Remediation
OTC	over the counter
PAHO	Pan American Health Organization
PATCH	Planned Approach to Community Health
PATH	Projects for Assistance in Transition from Homelessness
PCC	Poison Control Center
PCP	Pneumocystis carinii pneumonia
PCPFS	President's Council on Physical Fitness and Sports
PEP	postexposure prophylaxis
PHF	Public Health Foundation
PHS	Public Health Service
PID	pelvic inflammatory disease
PKU	phenylketonuria
POS	point-of-service
PPO	preferred provider organization
P&S	primary and secondary
PSA	prostate-specific antigen
PWD	people with disabilities
PWSS	Potable Water Surveillance System
QALYs	quality-adjusted life years
QIC	Quality Interagency Coordination
QOL	quality of life
RBC	red blood cell
RCRA	Resource Conservation and Recovery Act
RN	registered nurse
ROPs	rollover protection systems
SAMHSA	Substance Abuse and Mental Health Services Administration
SAPT	Substance Abuse Prevention and Treatment
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SED	serious emotional disturbance
SEER	Surveillance, Epidemiology, and End Results
SES	socioeconomic status

SHPPS	School Health Policies and Programs Study
SIDS	sudden infant death syndrome
SIPP	Survey of Income and Program Participation
SMI	serious mental illness
SOC	Standard Occupational Classification
SPF	sun protective factor
STD	sexually transmitted disease
SUD	substance use disorder
TB	tuberculosis
TESS	Toxic Exposure Surveillance System
TRI	Toxic Release Inventory
TRUS	transrectal ultrasonography
TSDF	treatment, storage, and disposal facilities
TST	tuberculin skin testing
UA	urban area
UMTA	Urban Mass Transit Authority
USDA	U.S. Department of Agriculture
USGS	U.S. Geologic Survey
USP	U.S. Pharmacopeia
USPSTF	U.S. Preventive Services Task Force
USRDS	U.S. Renal Data System
UST	underground storage tank
UV	ultraviolet light
VA	Department of Veterans Affairs
VAERS	Vaccine Adverse Event Reporting System
VAPP	vaccine-associated paralytic polio
VLBW	very low birth weight
VMT	vehicle miles traveled
VPD	vaccine-preventable disease
VSD	Vaccine Safety Datalink
WHO	World Health Organization
WIC	Women, Infants, and Children
wP	whole cell pertussis
YHL	years of healthy life
YPLL	years of potential life lost
YRBS	Youth Risk Behavior Survey

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES